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3DArtist 41

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Finishing touches

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37 PAGES OF TUTORIALS INSIDE

ULTIMATE GUIDE TO RENDERERS

Advice for integrating standalone solutions into your workflow

Arch-vis tuition

Techniques to improve composition, materials and lighting in your scenes

Volumetrics

Learn how to form clouds, smoke and wispy objects using modo 601

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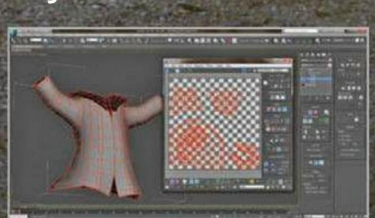

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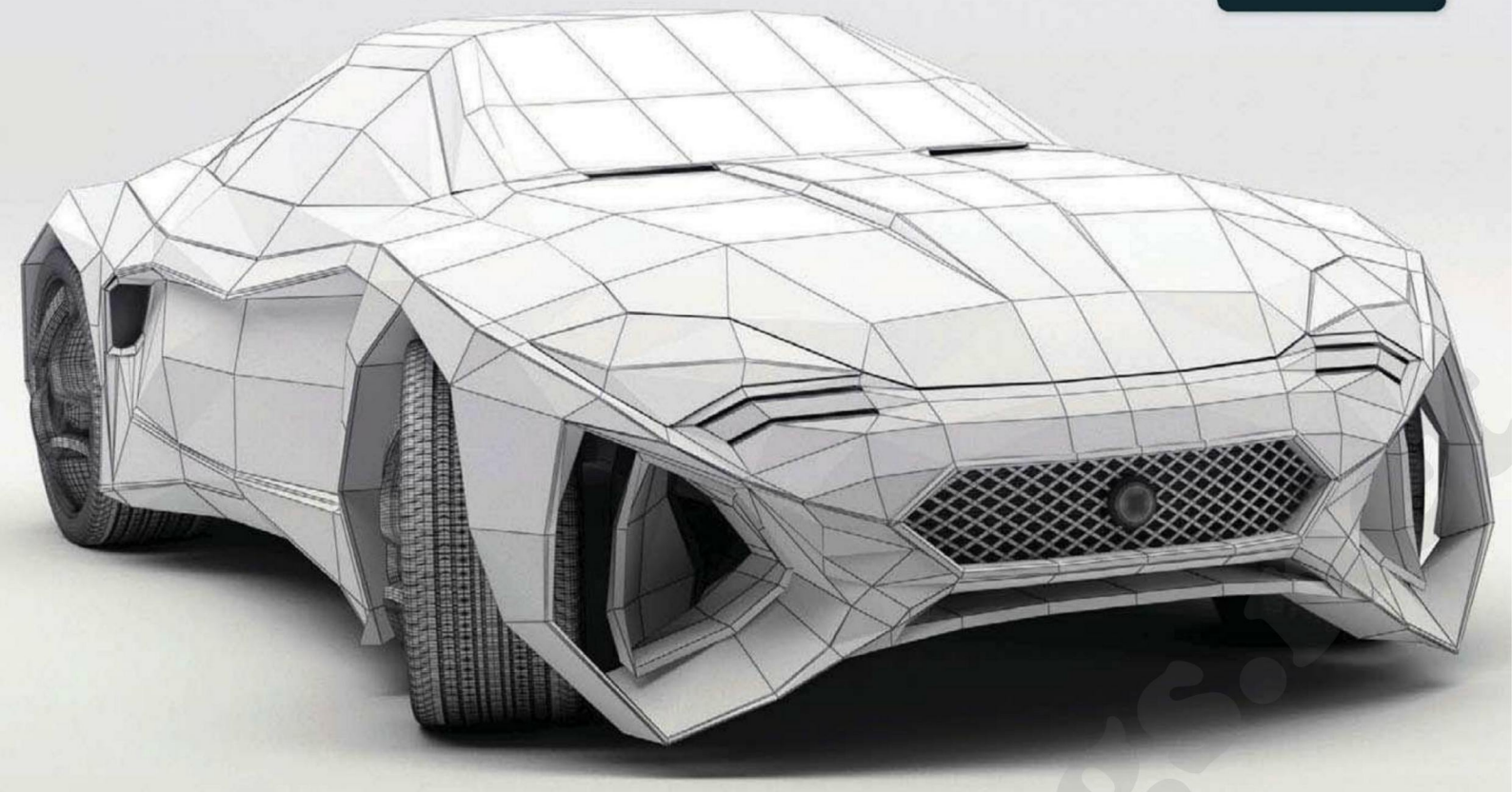

Hussain Almossawi & Marin Myftiu

Personal portfolio site
www.skyrill.com
www.marinmyftiu.com
Country Bahrain/Albania
Software used
3ds Max, V-Ray, Photoshop

EXPERT GUIDANCE
Turn to page 70 for the tutorial

Hussain and Marin are the artists behind this awesome concept car. If it's inspired you to create your own model, or add that bit of extra polish, be sure to check out page 70 where you can find tips for achieving the best camera angles, surface design, lighting and more.

"This step-by-step will guide you through the preparation of modelling a car, and then how to present it in the best way"

Hussain Almossawi & Marin Myftiu reveal some of the techniques used to create this issue's cover image

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Welcome

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5. **Tips for studying 3D or getting work in the industry**
6. The chance to see your art in the mag!

Hello and welcome to 3D Artist magazine! We've rustled up a wealth of great content for you this month.

First up is our feature on standalone rendering solutions – top industry artists reveal what programs they use and why. It's ideal if you're considering switching your software to improve your workflow.

Speaking of software, we've got a range of excellent tutorials using programs such as 3ds Max, Maya, ZBrush, Photoshop, Blender, Unity and more. Even better, when you've finished your image, simply share it through our gallery site (**www.3dartistonline.com**) to be in with a chance of seeing your work in the mag.

Enjoy the issue!

Sarah Slee, Editor

This issue's team of expert artists...

Toni Bratincevic

Toni's dedication to the very awesome Nikola Tesla kicks off our tutorial section this month. You can't afford to miss it

Yasin Hasanian

Take a break from character or vehicle design and create something that looks good enough to eat. Yasin shows you how

Lech Sokolowski

Lech's back for the second instalment of our house-build project. This time he's discussing cameras, accessories and more

Warner McGee

Mr McGee is our modo master this issue. He puts 601 through its paces and provides guidance on volumetric rendering

Antoine Desjardins

Canadian artist Antoine talks textiles this month. Learn how to model soft furnishings with 3ds Max and Photoshop

Digital-Tutors

Our Stateside friends at Digital-Tutors are all about utilising render elements in V-Ray for Maya this month. Check it out!

Ross Board

Ross has been a busy chap this month – he's interviewed the head of MakieLab and rustled up a fresh batch of industry news

Hussain Almossawi

One part of the duo behind our gorgeous cover car this issue, Hussain shares some of his workflow tips with us on page 70

Roald Høyer-Hansen

A new face on the expert panel, Roald knows his stuff when it comes to Unity. Follow his workflow over in the Workshop

Michael Burns

Hot off the task of covering *John Carter* last issue, Michael set to work on exploring standalone rendering solutions over on p28

James Morris

Tech expert James gets to play with some expensive bits of kit this month. Namely a sweet system setup from Armari

Duncan Evans

Baron von Evans returns to share some tasty nuggets of wisdom with us. Read his 3D Model Pro Suite review on p98

Sign up, share your art and chat to other artists at www.3dartistonline.com

3D Artist

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Contents

What's in the magazine and where

News reviews & features

9 Gallery
A handpicked collection of inspiring art for you to browse through

18 Community news
Catch up on the latest happenings in the world of 3D

22 The team loves
Including a Lytro camera, a remote-control car and an iPhone app that makes you healthier

24 Readers' Gallery
See which reader creations from 3DArtistOnline.com are in this issue

26 Have your say
Air your views, praise, criticism, Tweets and more on these pages

28 Feature: Ultimate guide to renderers
Michael Burns looks at a selection of standalone software solutions that could improve your workflow

40 Interview: MakieLab
How 3D printing is helping to revolutionise children's toys

90 Subscribe!
Save money and never miss an issue

92 Review: Armari Magnetar X32-AW1275
A system setup that houses Intel's new Xeon E5

94 Review: modo 601
One of the industry's biggest applications just got bigger

96 Reviews: Mara3D/ Hot Rod Art Book
We give you the verdict on two very different apps

98 Review: 3D Model Pro Suite
A pack of poses, models, hair and clothing for DAZ artists

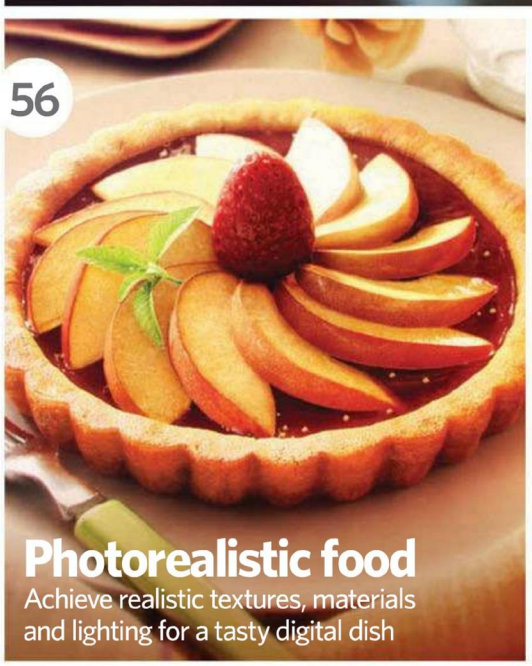
46

Making of Tesla

"This tutorial will focus on areas such as materials, lighting, rendering and compositing"

Toni Bratincevic reveals parts of the workflow for his latest image

38



56

Photorealistic food

Achieve realistic textures, materials and lighting for a tasty digital dish

Studio Mi talks about its animation work for Sony

106

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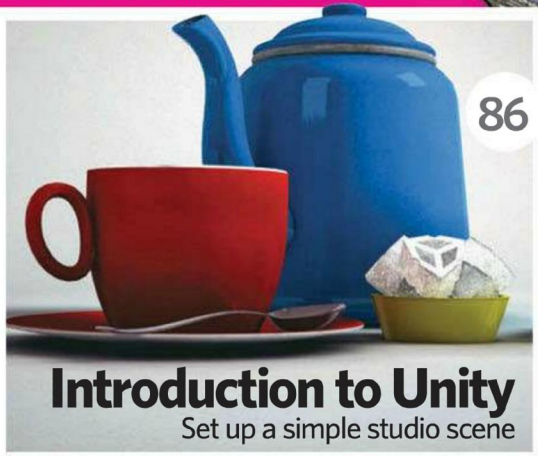
Fabric for furniture

Create convincing textiles with 3ds Max and Photoshop

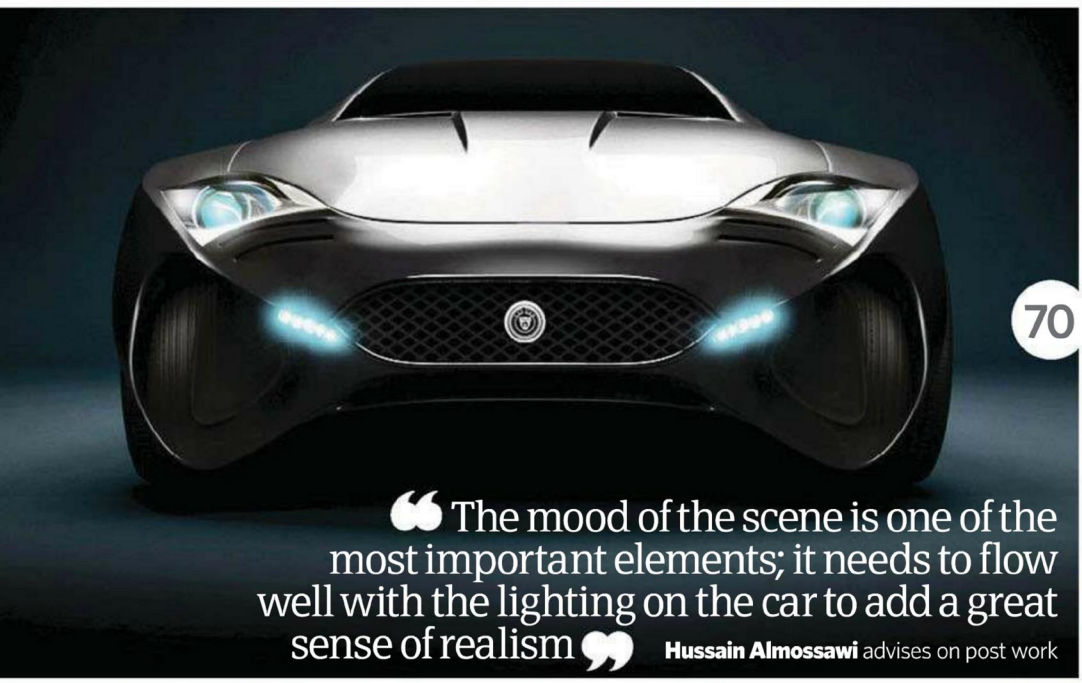
80



86

Introduction to Unity

Set up a simple studio scene



70

> The mood of the scene is one of the most important elements; it needs to flow well with the lighting on the car to add a great sense of realism

Hussain Almossawi advises on post work

The workshop

Expert tuition to improve your skills

76 Masterclass: Utilising render elements in V-Ray for Maya
How to add a number of effects without having to re-render

80 Questions & Answers
This section is for users who have some experience of 3D and want to learn more

3ds Max & Photoshop: Fabric for furniture

modo 601: Volumetric rendering

86 Back to basics: A beginner's guide to Unity
Learn how to set up a simple studio scene

workspace

Industry news, career advice & more

102 Industry news
Get up to speed with industry events

105 Project Focus: Derrick the Deathfin
A commission involving cardboard-style 3D assets for a PSN game

106 Studio Access: PS Vita
Mi talks about its work on the introduction animations for Sony's augmented-reality launch games

108 Industry insider: Jack du Rose
How one artist went from working in a bookshop to designing stunning jewellery

The studio

Professional 3D advice, techniques and tutorials

44 I made this Rune Holst Månsson, *Henson's Greek Fishmonger*
Take a look at Rune's first ever Maya project

46 Step by step: Toni Bratincevic, *Tesla*
Find out how to achieve photorealism in your scenes

54 I made this Damir G Martin, *Carnotaurus*
A window into the past with this dinosaur-themed 3D

56 Step by step: Yasin Hasanian, *Aroma*
Use Maya, ZBrush & Photoshop to tackle a delicious new project

62 Step by step: Lech Sokolowski, *Master arch vis*
Part two talks you through camera placement, building the surroundings and more

68 I made this: Sofian Moumene, *Ice Cave*
What started as a material test evolved into a cool sci-fi scene

70 Step by step: Hussain Almossawi and Marin Myftiu, *Model a luxury car*
Apply the finishing touches to really make your models shine

On the Disc

- Over 1.5 hours of video training
- Models worth $100
- Two HDRI maps
- A trio of free rendering software trials

Turn to page 112 for the complete list of the disc's contents

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WELCOME TO THE GALLERY

Nine pages of great artwork from the 3D community

Images we love!

Warner McGee

Personal portfolio site
www.warnermcgee.com
Country USA
Software used
Photoshop, modo

"My goal was to create a natural-looking CG [female] character that was highly textured and posed convincingly. The challenge for me was to get proper placement of the joints and weight them"
Warner McGee, *Lucky,* 2012

Featured artists

Warner McGee

Created in modo, Warner's character creation certainly has a lucky shine

Andrzej Sykut

This sci-fi homage really grips the attention with great kinetic effects

Yuma Sadakata

Photoshop was effective in adding a realistic texture to this metal creation

Nilo Aleo

A beautiful building to feast your eyes on. We wouldn't mind living here!

Cornelius Dämmrich

Cornelius shows how a bit of mess can really help bring life to a scene

Ted Lockwood

Here's a gal that really packs a punch; a vibrant character design from Ted

Sung Woong Kim

A confident grasp of anatomy and texturing is clearly presented here

Hasan Bajramovic

Hasan has created a brilliantly photo-real character, using 3ds Max and ZBrush

Get your artwork featured in these pages

Simply send it to the **3D Artist** Gallery. Here's how...

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3. Tell us about them!
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Email or post

You'll be missing out on a thriving 3D community, but if you'd rather submit your work by email or post, here's how. Make sure your image is at least 3,000 pixels on the longest side, save it as a maximum quality JPEG or zip it up as a TIFF and email it to the address below. Please include your contact details! If you've created a Pixar-beating animation and want to see that featured on the cover CD, then save it onto a CD and post it to us. You can also send your images on CD. The addresses are:

sarah.slee@imagine-publishing.co.uk

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Comment on more great 3D art...

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"I always wanted to create something in the vein of old-school sci-fi illustrations, but all I had in my mind was just bits and pieces… My inspirations were various, from Cassini mission images to tropical fish, Chris Foss or John Harris illustrations. A fun image to create!"

Andrzej Sykut, *The Journey – Up in the Rings,* 2012

Artist info

Andrzej Sykut

Personal portfolio site
www.azazel.carbonmade.com, www.azazelphoto.tumblr.com

Country Poland

Software used
Photoshop, 3ds Max, V-Ray, Wings 3D

Work in progress…

The team Loves

"This is so exciting! The light trails and beautifully rendered atmospheric effects really create a sense of drama. Not to mention the incredible colour palette!"

Lynette News Editor

Artist info

Yuma Sadakata

Personal portfolio site
http://zomwalk.ma-jide.com
Country Japan
Software used
Maya, Mudbox, Photoshop

Work in progress...

The team Loves

"The framing and composition of this shot really sells it for me, with subtle touches that help break up symmetry and lead the eye around the intriguing machine. The depth of field is a nice trick, too!"

Lynette News Editor

"I've designed a drop-head robot – 'shizuku' means 'drop', in Japanese. I wanted to express surface rust and scars nicely. I painted rust on the texture image based on the exported paths with Photoshop"

Yuma Sadakata, *SHIZUKU-01,* 2012

The team Loves

Beautiful composition and a stunning structure to match. The lighting creates a warm and welcoming tone

Sarah Editor

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Share your art, comment on other artists' images

Artist info

Nilo Aleo

Personal portfolio site
http://niloaleo.weebly.com

Country Cebu, Philippines

Software used
3ds Max, V-Ray, Photoshop, MultiScatter, PixPlant

Work in progress...

"This image was created for a rendering competition organised by cgworkshop.org. The trees are from Evermotion and iCube trees. Meanwhile, I used VraySun and VraySky for the lighting"

Nilo Aleo, *Xata House*, 2012

The team Loves

Cornelius cleverly details human activity to give life to his scene. Adding cats can often be distracting, but this little feline helpfully directs our attention to the subtly smokey workstation

Lynette News Editor

Artist info

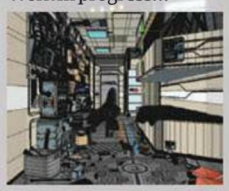
Cornelius Dämmrich

Personal portfolio site
www.evoleeq.com

Country Germany

Software used
CINEMA 4D, V-Ray, Photoshop, ZBrush

Work in progress...



The main reason for creating this artwork was a picture of a motherboard I saw, which was completely grey... My aim was to create a detailed scene without shaders or textures, but I was unable to achieve the look I wanted. I abolished the idea and gave the scene a used touch!

Cornelius Dämmrich, *Mercury*, 2012

The team loves

This feisty gal makes quite the impact in her vibrant attire that's almost as bright as the sun. We certainly wouldn't fancy being on the receiving end of these fisticuffs!

Lynette News Editor

Artist info

Ted Lockwood

Personal portfolio site
www.monkeyknifefights.com

Country USA

Software used
ZBrush, Photoshop, 3ds Max

Work in progress...

"Stylising anatomy is a great challenge for a character artist. I wanted to test my anatomy knowledge by making a character that was cute and tough at the same time... Molly's the result"

Ted Lockwood, *Molly Facepuncher,* 2012

> I wanted to create a biological machine, and I designed it sleek and slim to show its own character. I also wanted to express the beauty of the human body
>
> **Sung Woong Kim,** *Shatis*, 2011

Artist info

Sung Woong Kim

Personal portfolio site
www.kswmania.blog.me

Country Korea

Software used
3ds Max, ZBrush, Photoshop

Work in progress...

The team Loves

> Despite the lack of eye contact here, the pose of this armoured character creates a definite piercing stare! We love the worn look to his weathered metal plates too
>
> **Lynette**
> News Editor

Artist info

Hasan Bajramovic

Personal portfolio site
www.hbajramovic.cgsociety.org

Country Bosnia and Herzegovina

Software used
3ds Max, ZBrush 4R3

Work in progress...

The team Loves

"There is such great depth to this image! The particle effects offer a real sense of space within the frame that this striking character has been captured within"

Lynette News Editor

"I'm a huge fan of Japanese culture and this artwork represents something that I've always wanted to do because of my love for the theme and its complexity. His name is Katsumoto and he is loyal to the Empire and determined to fight against all enemies of the great Shogun"

Hasan Bajramovic, *Katsumoto,* 2012

Strength in numbers

Michael Cawood explains how his zero-budget short film used global volunteers to succeed where others have failed http://devilsangelsanddating.com

Professional animator Michael Cawood came up with the concept for the short film *Devils, Angels and Dating* five years ago while looking for an imaginative project to contrast his day job, where he was mostly animating in 2D. "The story evolved a lot over the years, but at its core it was always designed to... provide a unique challenge to animate," Michael says. "I was interested in the ever-changing world of internet dating at the time and I felt it was an area we'd not seen much of in animation, so that was my starting point."

Getting a project of this magnitude going was slow work, but Michael was determined to succeed. "There's plenty of other projects posted in forums left there as an ugly reminder that these things don't usually succeed," he comments. "My only hope was trying to do it differently to all those other projects." It wasn't the making of the film that was going to be the problem; it was doing it outside of a studio, with no funding and no client or employer.

Michael decided to pioneer an outsourcing exercise: without the budget to hire staff, he relied on the strength of his concept to attract artists the world over to assist with the production. "You have to find the right talent, at the right point in their lives, with enough free time, passion, commitment and desire to build their portfolios," Michael explains. "So it was necessary to reach a lot of people then filter down to the best candidates." At its peak, over 30 people were posting regularly throughout the day. "For the most part it was all just written notes in forums, but to supplement that everyone was posting videos and images as well to show shot progress, tutorials and critiques," Michael says. "In certain ways it was even more effective than working in a studio – at the very least there is a lot to take away from this experience that I can see enhancing the traditional studio setup." A development website was used to track progress, enabling everyone to stay in touch, keep updated and read Michael's notes.

The final film was launched earlier this year, and a good number of the core volunteers have gone on to find work at studios including DreamWorks, Imageworks, Blue Sky, Digital Domain, and Double Negative. Michael concludes: "It does showcase the power of the individual working from home with nothing but passion and talent. Possibly a hint at what's to come in the future of animation production?"

3DArtist online

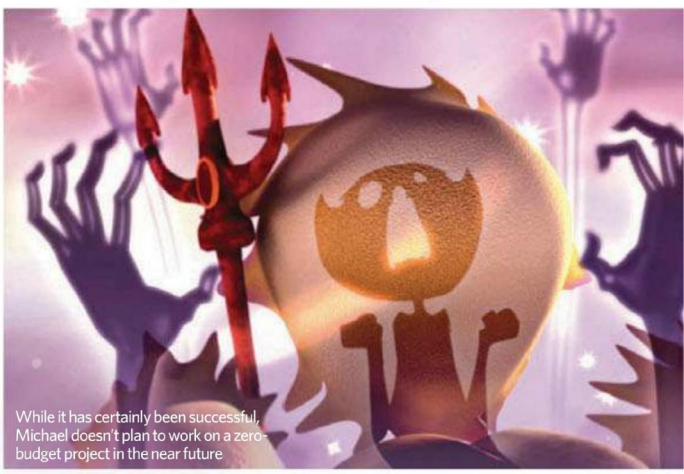
Are you working on a short film or looking to improve your showreel? Discuss this and more with your fellow **3D Artist** readers on the forums at: **www.3dartistonline.com/forum**

Off to the festivals

Michael discusses the festival circuit

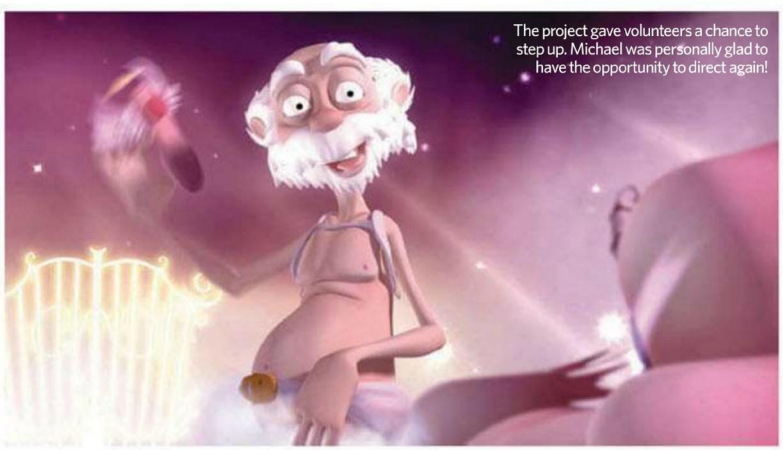
"[The film] has been entered into a number of festivals and there will be more submissions through the year. The odd thing is that after years of such immediate results, constant updates and progress, it suddenly feels really slow having to wait for the festival circuit to play out. Putting plastic and paper in envelopes and sending it half-way round the world, then waiting months for a response, seems so... last century!"

The contributors now have a great body of work for their portfolios. Many came to the project with light reels and left with dozens of new things to show



While it has certainly been successful, Michael doesn't plan to work on a zero-budget project in the near future

The film has had a steady growth in views since its release, and is leading the volunteers to other opportunities



The project gave volunteers a chance to step up. Michael was personally glad to have the opportunity to direct again!

> "It does showcase the power of the individual working from home"
>
> **Michael Cawood,** director of *Devils, Angels and Dating*

Who else worked on the film?

While there are too many to list in full, a few key people played pivotal, long-term roles on the production

Iskander Mellakh, USA worked alongside Michael as technical director and provided the dynamic elements of the characters, such as flowing hair, hoods, tails and so on, as well as systems to generate pixie dust, God rays and lots more. "He essentially became the go-to guy for repeatable 3D effects, scripting and tools, while lending a hand with anything else he could help with!" Michael says.

Philippe Rey, France – the film's extremely cooperative and supportive composer. "This is such an important area of the film that I can't state enough the importance of finding someone like this, and Phil really came through for us," Michael adds emphatically.

Michael Newton and Jay Taylor, Australia – Michael was the sound mixer alongside Jay who did a sizeable amount of sound-effects work. "It was a very inventive world to find sound for and they did a great job of bringing it to life," Michael comments.

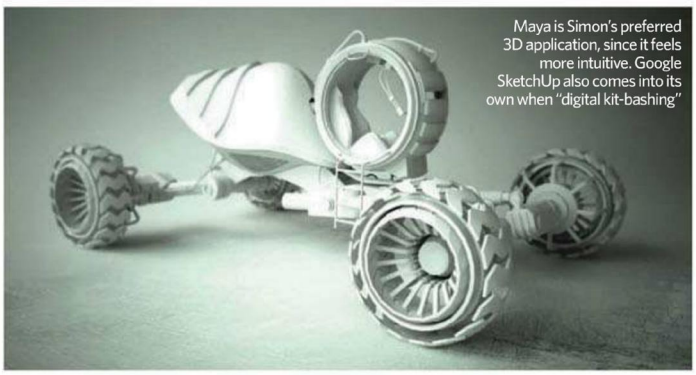
Shane Davis, USA – acted as assistant producer, taking some of the burden helping with funding, tackling the paperwork and stepping up to the mark. "Having someone like this on the team was invaluable, if only for the support," Michael adds.

3D Sketchbook

3D in concept design

Simon Butters enjoys the different perspective 3D offers when designing, forcing him to better consider proportion and mass

Simon Butters http://simonbuttersart.blogspot.co.uk



Maya is Simon's preferred 3D application, since it feels more intuitive. Google SketchUp also comes into its own when "digital kit-bashing"

When Simon Butters realised the automotive industry wasn't for him, he switched his focus to concept art in the final year of his transport design degree. After freelancing for 10 months, he got his first big break working on high-budget videogames.

Initially learning 3D while studying transport design, used mostly in the final stages of projects to create photorealistic renders, Simon realised the power of 3D throughout the concept pipeline. "I often work back and forth between 2D and 3D, making design decisions by painting over my model in Photoshop before making the changes to the model," he explains. "I mainly use 3D applications to block in basic

geometry when creating an image. If I'm designing a wheeled vehicle I might just drop in four cylinders with the desired wheelbase and use that as the starting point. Sometimes I may take this a bit further by doing side-view sketches of my vehicle and then in Maya create a very basic proxy model as the basis for the final design. This ensures you have very accurate, hard points to work from which helps maintain consistency."

Henk Dawson

Stories and background information

Henk Dawson has been working as a 3D generalist in the trenches for over 20 years, making it his business to keep up with trends and adapt to industry changes. His blog offers a wonderful peek into the work of a freelance 3D artist tackling everything from realistic cell phone animations and product prototype illustrations to magazine covers. We also love his sharing nature: his blog is filled with making-of insights into his latest projects – great for those keen to learn, as well as clients!

www.d3d.com/3D/Blog/Blog.html

Masterpiece

'Valentine Villain'

Hayden Barnett stumbled across this mischievous character while sketching Valentine's card ideas in his notebook

Hayden Barnett http://haydenb.cghub.com

Hayden exported displacement maps to overlay onto his textures in Photoshop, giving them extra depth

Fascinated by clouds and fuelled by the anticipation of combining the symbolism of a skull with a heart into a single character, *Valentine Villain* was brought to life in Softimage, ZBrush and Photoshop. "I use Softimage daily, as its modelling tools are fast and user-friendly," Hayden says. "I quickly shaded all the objects, set up my camera [and] lit and rendered the scene to get a quick idea of what my image could look like." The composition and pose of the character changed slightly before he exported to ZBrush to sculpt more detail and texture.

The lighting setup used Softimage's Physical Sun with Final Gathering. "When I was happy with the look, I created beauty, specularity, reflection, Z-depth, colour ID and ambient occlusion passes," Hayden adds. "Once rendered out, I composited my passes in Photoshop, where I also painted in some volume lighting entering from the left of the screen and floating particles." Final touches included some Sharpen filter action and some slight chromatic aberration to subtly make the image pop.

DJ Steampunk and Steampunk Hunter are two of the incredible masks

Inspiration corner

Steampunk creations

Sergey Petrov's unique leather masks are a great source of inspiration for artists looking for a steampunk aesthetic

Sergey Petrov http://bobbasset.com

What's not to love about steampunk? Whether you envisage a steampunk world as a post-apocalyptic metropolis or a steam-powered village, the possibilities that the style opens up for art are immeasurable.

Take the Bob Basset workshop, for example: these remarkable masks are mostly crafted from leather and fuelled by the imagination of Sergey Petrov and his team. Some terrifying, others humorous, each mask tells its own story, offering onlookers an insight into a world where these creations could very well be everyday wear. And while these bizarre disguises will encourage out-of-the-box thinking for your own 3D creations, the glorious materials used to build them should also give you plenty to study. So when you're designing your next steampunk character or fantasy helmet, take a look at Bob's website for lashings of inspiration!

Bob Bassett http://bobbasset.com

Free 3D Resources

ZClassroom on your mobile

You can now stream videos from the ZClassroom website on mobile devices

ZClassroom

Web: www.pixologic.com/zclassroom/homeroom

Whether you're looking to get started in ZBrush, learn the art of digital sculpting, pick up texturing techniques, or discover more about rendering and posing, Pixologic's ZClassroom has a helpful go-to library of free video ZBrush lessons. What's more, Pixologic has now enabled the ability to view the videos on your

mobile, including iOS and Android devices. Providing you have an internet connection, you can stream the videos any place, any time and absorb the learning.

Artist spotlight

Pushing boundaries in Carrara

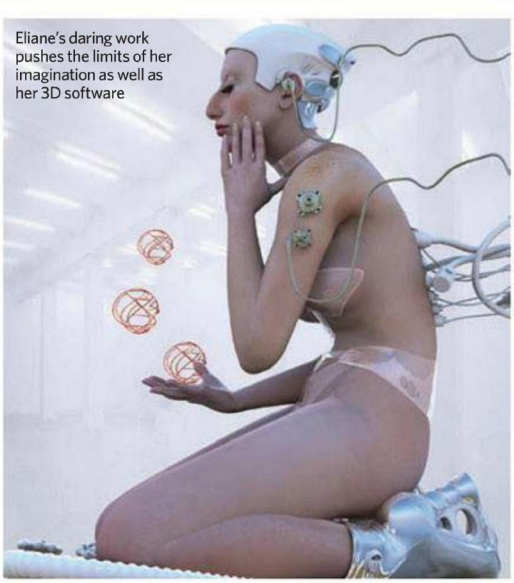
Eliane Camargo de Abreu likes to prove any software can achieve great results in the right hands

Eliane Camargo de Abreu www.elianeck.com

Eliane has always had a passion for drawing and painting, but it wasn't until Poser fell into her sights that a new excitement for 3D was awakened. Moving from Poser to DAZ Studio, she eventually arrived at Carrara. "I spend much of my time trying to understand how the lights work [in] Carrara rendering," she says. "[I have] learned many programs and tips from friends."

Based in Brazil, Eliane is a fan of cybernetics and all things futuristic, and her portfolio is a testament of such, featuring a host of bizarrely innovative characters. We are particularly fond of this recent addition, *Cyber Gaga*, clearly inspired by the world-renowned singer. Her illustration shows a great understanding of weight, with a pose that's both strong and delicate. The character's unconventional beauty also sets her apart from the more common portraits seen in artists' galleries.

Check out Eliane's **3D Artist** profile at **www.3dartistonline.com/user/elianeck**, but please note that her gallery contains some adult content, which may not be suitable for a young audience.


Eliane's daring work pushes the limits of her imagination as well as her 3D software

Wes created about ten miles of highway in addition to the various locations where there's no action

Watch RUIN by OddBall on Vimeo at http://vimeo.com/38591304

behind the scenes

Sci-fi adventure

Wes Ball of OddBall Animation creates a world with characters, conflict and journeys

Wes Ball www.oddballanimation.com

RUIN was a daydream for many years until its creator, Wes Ball, gave it 100 per cent. "I decided to take a bit of a risk... Once I committed and began writing... it took 8 months."

To tell the futuristic story, everything was modelled and rendered in modo. Character, aircraft and vehicle animation was handled in LightWave, using LightWave's LWO files to share meshes with modo and FBX to get the all-item animation from LightWave and into modo – including camera animation and rigid body animations. Compositing in After Effects, Wes worked in 16-bit Linear space with mostly OpenEXR renders from modo. "I tried to nail everything in the render out of modo," Wes adds. "I pretty much only rendered my one final colour pass, simple mattes I wanted for colour correction and several depth passes at varying depths."

And the winner is...

The incredible entries to the 3D printer competition gave the 3D Artist and MakerBot judges plenty to discuss!

A competition in issue 36 asked entrants to design a pet monster for a chance to win a MakerBot 3D printer. The idea was to encourage artists to use their imaginations and to be innovative within a small footprint.

Artists could use any 3D software, with the purpose to generate a manifold (watertight) mesh suitable for 3D printing within 100 x 100 x 120mm. This meant things like feathers, small joints and thin clothing were going to be particularly challenging! With the votes now counted, we're excited to reveal the winners:

Runner up #1 Ben Malouf – aka BenitoSanduchi – with *Fat Bunbun*. A monstrously greedy bunny that would no doubt look happy at home on any desk!

Runner up #2 T Shawn Johnson – aka Whystler – with *Teacup Dragon Puppet*. Scaled to live in a cup, her head has been designed to move using a rod under her body.

Runner up #3 Matt Thorup – aka Redbeard – with *Pug Monster Pet*. Cute from the front, nasty on the reverse. We love his quizzical expression and helpless pose!

Grand prize winner Andreas Böhler – aka andreas – with *Pet Monster Blobby*. Receiving lots of attention, Blobby was just one of a handful of creations submitted by Andreas. Check out the final submissions on Thingiverse at **www.thingiverse.com/search/page:1?q=3dartistmag**.

3DArtist online.com

Create your gallery, browse the artwork, chat with experts and artists and get tips and techniques at

www.3dartistonline.com

The team loves

Get in touch!
Tell us about your favourite design-related purchases
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or Twitter
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3DArtist Team choice

* The US $ price is an approximate conversion, which was correct at the time of publication.

Product of the month
Lytro camera

» **Lytro**
Stockist: www.lytro.com
Price: From $399 US*
We say: The Lytro is not your average camera. Rather than capturing bigger pictures, it goes deeper, snapping the entire light field – which basically means all light travelling in every direction in every point in space. Whew! The capabilities of this little camera could prove wondrous for 3D artists, since the beauty of the captured data enables you to focus after the fact, creating HD-quality images from what are essentially living pictures. It really is the work of pure genius. Discover the science behind the contraption on the Lytro website and prepare to be impressed! A

B Bakelight Pencil Sharpener
» **KIOSK**
Stockist: http://kioskkiosk.com
Price: $17 US
We say: Pencil sharpening is a serious business, and there's nothing more so than this little beast. Just as strong as steel, it's made of duroplast, that retro material that's tough enough to build a car body. While this sharpener won't provide four wheels or leather-clad seats, it does offer quiet confidence in the future of your pencil tips, with a two-pronged design that dates rather stylishly back to the Fifties.

C Pivot Power – A Creative Outlet
» **Quirky**
Stockist: www.quirky.com
Price: $30 US
We say: While UK readers can but look on in envy at this clever little design, our US and Canadian followers will be revelling in surge protection delight as their cables and chargers are helpfully tucked away – and in style too. Offering six connections in a bendable design, Pivot Power will effortlessly fit and tuck around furniture and corners. Hold tight though UK folks, because future versions are planned for international release.

D Outspeeder
» **Revell**
Stockist: www.revell-control.de
Price: €20 EUR
We say: There's something about remote control cars that never fails to get the heart pumping. And if you're going to geek out, what better way to do it than with a super-fast remote control stunt car? This one has a turbo boost to bring it up to speeds of 20km/hr, and even features a built-in roll bar to prevent it getting stuck on its back – although, you might like the nostalgic sounds of a toy car revving upside-down!

E Compass Mobile Stand
» **Twelve South**
Stockist: http://twelvesouth.com
Price: $40 US
We say: Artists should enjoy popping their iPad onto this slick easel-like contraption, making photo slideshows, iBook reading and TV watching a more enjoyable experience. If you like working on your iPad, the easel will quickly transform into a perfectly angled stand for tappers. It's tiny enough to keep with you on the move, transform your iPad into a theatre or workstation whether you're on the plane or in a meeting.

F UP
» **Jawbone**
Stockist: http://jawbone.com/up
Price: £80/ $100
We say: An iPhone app that makes you healthier? Yes, please! Introducing UP, the wristband and app combo that encourages a better lifestyle, you'll be moving, sleeping and eating like a fit fiddle in no time. Use this package to cleverly track your activity, sleep patterns and program the band to vibrate when you've been still for too long. It'll even replace your alarm clock by gently vibrating your wrist, without abusing those delicate morning ears!

SMITH MICRO SOFTWARE

Boundless creativity beckons you.

Image by synthymonkey.
Miki3 from Content Paradise. Circus props by
Sixus 1 and Luke A. TerraDome by Runtime DNA.

Breathe life into your story with Poser.® Use Poser to pull in assets from any location, including online and local libraries, or from your favorite 3D tools. Take complete control of lighting, clothing and props to build your scenes, populate with characters and tell your story. Discover your path to personal creativity at **poser.smithmicro.com**

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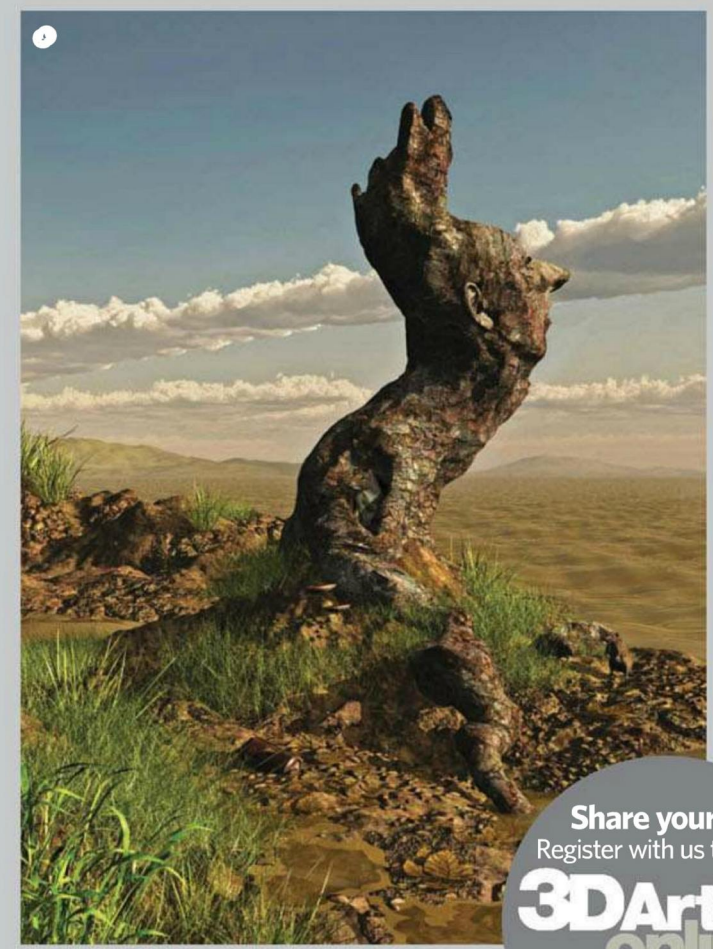


Share your art
Register with us today at
3DArtist online.com
www.3dartistonline.com
to view the art and chat to the artists

Pictures of the week

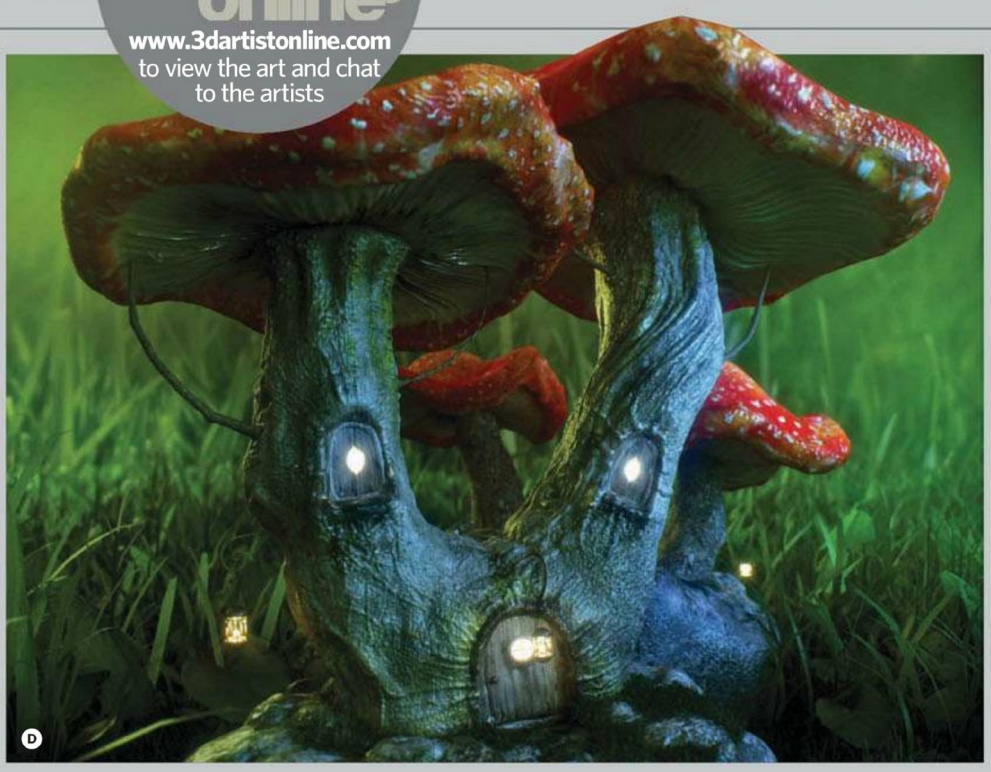
THESE ARE THE IMAGES THAT WERE AWARDED PICTURE OF THE WEEK IN THE LAST MONTH

A Robert Schlenker
» **Reservoir**
Robert says: "As a child, I would often play in this muddy lake with a friend of mine. His face has been added into the tree stump here"
We say: "A beautifully detailed, surreal image"

B Connor Eccles
» **Winter Bathroom**
Connor says: "This was a personal project to test my skills in producing photorealistic interiors"
We say: "A fresh, modern room design with a cool, calming feel to it"

C Fuad Ghaderi
» **Hsd V.01**
Fuad says: "Created using 3D-Coat, KeyShot and Photoshop"
We say: "An interesting and original character concept"

D George Krallis
» **Mushroom House**
George says: "Made with ZBrush, 3ds Max, V-Ray and Photoshop"
We say: "What a lovely little abode!"

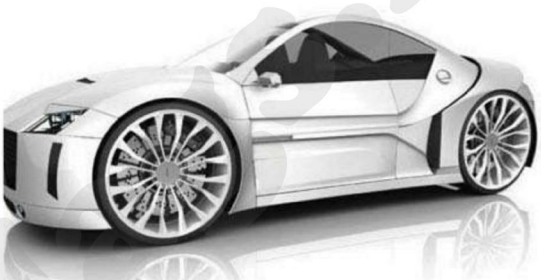


Sketchbook giveaway!
The four artists awarded 'Picture of the Week' each get a 3DTotal sketchbook, courtesy of **www.3dtotal.com**

Picture of the month

Mike Fong
» **Rolleiflex**
Mike says: "One of my older works. A scanline render in 3ds Max with various spot and omni lights"
We say: "A lovely old camera. Great composition and depth of field"

Craig Clark
» **Diamond Earrings**
Craig says: "Modelled in LightWave; rendered in Bunkspeed PRO Suite"
We say: "The earring on the right-hand side is particularly convincing"

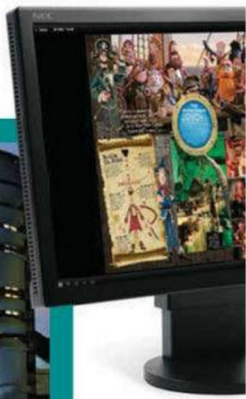


Matthew W
» **Concept Car Rism V2.0**
Matthew says: "Based on my own car concept"
We say: "We really like the shape of the alloy wheels – not much room for going over bumps, though!

Josh Crockett
» **The Grey**
Josh says: "A creature bust of a grey alien created in ZBrush using the DynaMesh tool and polypaint"
We say: "His skin and eyes look so realistic"

Have your say

Write, email or use the website forums to get in touch about the magazine, your problems or triumphs



Top tweets

Get involved... @3DArtist

@damaroyWorkshop Ever wondered [how many] total render hours for every page of @3DArtist you pick up? Geez! It's worth every penny [and even] archiving.

@3DArtist Woohoo! #3DArtist is now available to buy on #Zinio!

@SydMeadfan This is totally awesome! I love it, inspired to finish mine now! #cg Female Robot featured in this month's @3DArtist.

@SydMeadfan [On winning the Star Letter prize] Thanks for my free month that I won @3DArtist.

@tomglimps @3DArtist Queen of ArchViz @pixela25 =).

@FirminFrederick Sculpting with [the] ZBrush tutorial has taught me so much!

On the Wall

Facebook.com/ 3DArtistMagazine

Jorge Barros I got featured in 3D Artist magazine :) Read on!

Ovidiu Voica I am glad to see my Odin model made to the cover of 3D Artist magazine. Many thanks to the 3D Artist team!

Francis-Xavier Martins Got my issue of 3D Artist and *Top Hat Gent* was in it. Splendid! Thanks to Lynette for making it happen.

Isabel Rodrigues He looks funny, I like it.

digital-tutors

www.digitaltutors.com is a learning resource site boasting a library of 17,000 video-based CG lessons.

THE AUTHOR OF THIS ISSUE'S STAR LETTER WINS A MONTH'S FREE SUBSCRIPTION TO DIGITAL-TUTORS WORTH $45

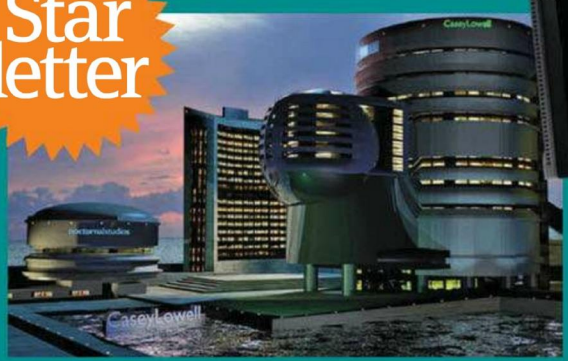
Star letter

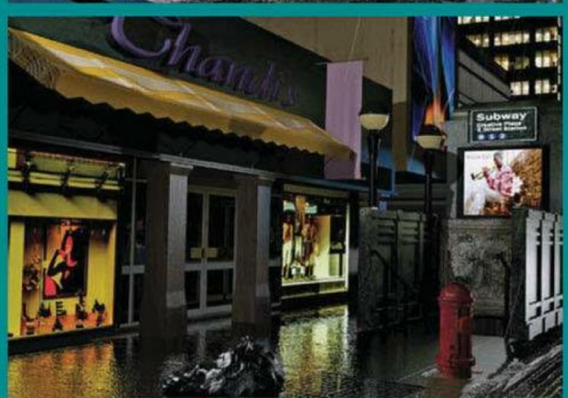
Veteran artist

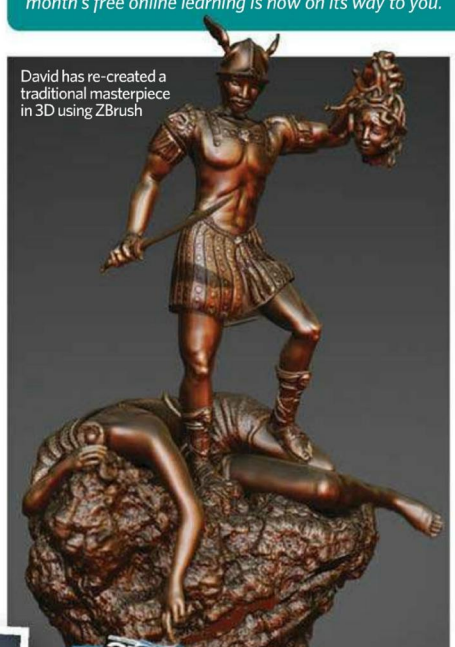
As a retired navy artist I began back in the pre-PC age of cut and paste graphics and always wanted to do new things. Now at the age of 51, I'm enjoying the world of 3D modelling and animation, eating up your issues with every tip I can. Your magazine has been an inspiration and a great source for learning and the discs are awesome. Here are a couple of my Blender images. *Rainstreet* is a still from an animation project and the other is a still of my *Dream Artists Complex*.

Erick Murray (USN Ret)

Glad to hear you're enjoying the issues, Erick! Thanks too for sharing your work with us. To reward your service to your country, as well as your active membership in the creative community, we'd like to present you with the Star Letter prize this issue! A month's free online learning is now on its way to you.







David has re-created a traditional masterpiece in 3D using ZBrush

Artist's impression

I wanted to share my latest work with you. It was created for a university project where we had to visit the V&A museum and choose a sculpture to replicate using ZBrush. The sculpture I chose to re-create was *Fountain with a Figure of Perseus* by Hubert Gerhard.

It was created entirely in ZBrush – it's also only [my] second time using the software.

David Vidal

Wow, digitally re-creating Hubert Gerhard's sculpture is no easy task. We're impressed you tackled such a complex piece in your second ZBrush attempt!

Head over heels

My name is Karimov Damir and I'm from the city of Chelyabinsk in Russia. I would like to show you my latest work. It so happens that I have fallen in love with Natasha and I wanted to create an image to tell her (and the rest of the computer graphics community) how I feel.

Karimov Damir

Congratulations! We hope the lucky lady is pleased with her appearance in the magazine, albeit through the medium of digital art!

SAVE MONEY & SUBSCRIBE! Turn to page 90 for details

3D Artist can now be found on Zinio for your smartphone or PC

3D Artist – digital editions

Is it possible you could tell me how I can read 3D Artist on my Android smartphone or on my PC. Are there any plans to sell your magazine via Zinio?

Dalibor Kalna

*Thanks for getting in touch, Dalibor. We are pleased to announce that **3D Artist** is now available to buy through the Zinio platform. Just head to **http://gb.zinio.com/3DArtistdirectissue**. This is in addition to PixelMags on the Apple Newsstand as well as online through the official Imagine Publishing store.*

Biological adventures

I'm currently developing a short called 'Cell' – it features a red blood cell called Fenris and it's about his oxygen-transporting adventures. I have included some of the storyboards to showcase it in the magazine. Please also visit www.carlitosart.com for more information.

Carlos Garcia

Thanks for sending your work over, Carlos. Best of luck with the rest of the project.

Carlos' storyboards certainly seem intriguing and show a lot of potential

Karimov has brought a bit of romance to his 3D creation

You tell us

Has anyone recently switched to another program to improve their workflow?

Facebook.com/3DArtistMagazine

Stephen Mangold Nope, started with Maya, tried Max and didn't like it so I went back to Maya.

Benjamin Leary A while back, I started baking maps in xNormal and it changed my entire workflow. Fast, accurate bakes with a user-friendly interface? I'm in!

John L. Haverkamp I switched from 3ds Max to ZBrush and Blender with BSurfaces for retopo.

Francis-Xavier Martins I find UV Master in ZBrush invaluable for doing quick unwraps on organic models. Then I do a quick cleanup in Maya. Saves loads of time than if I started from scratch in Maya.

Charlotte Wills I now use Sculptris for my modelling. Do the basic in Maya then improve in Sculptris.

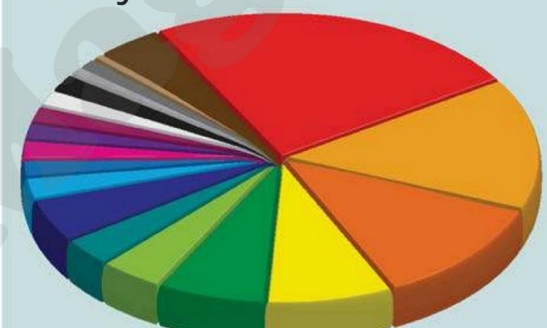
Jan Jinda A year and half ago, when I became a freelancer, I switched from Softimage to modo because of price. It provides all I need and with ZBrush it's a killer combination. Now, I'm working in a Softimage-based studio, but I'm still using modo for everything when I can. It simply suits me better than Softimage.

Wojciech Portnicki modo 601 can't be beat when it comes to improvement! Retopology tools, Hair shader, Rounded-edges shader, Blobs, render passes, Soft Bodies with Recoil, Volumetrics, character animation and deformers. Woooh! I've probably missed a couple but you get the point.

JOIN THE DISCUSSION: Facebook.com/3DArtistMagazine Twitter: @3DArtist

You vote

What software do you use on a daily basis?

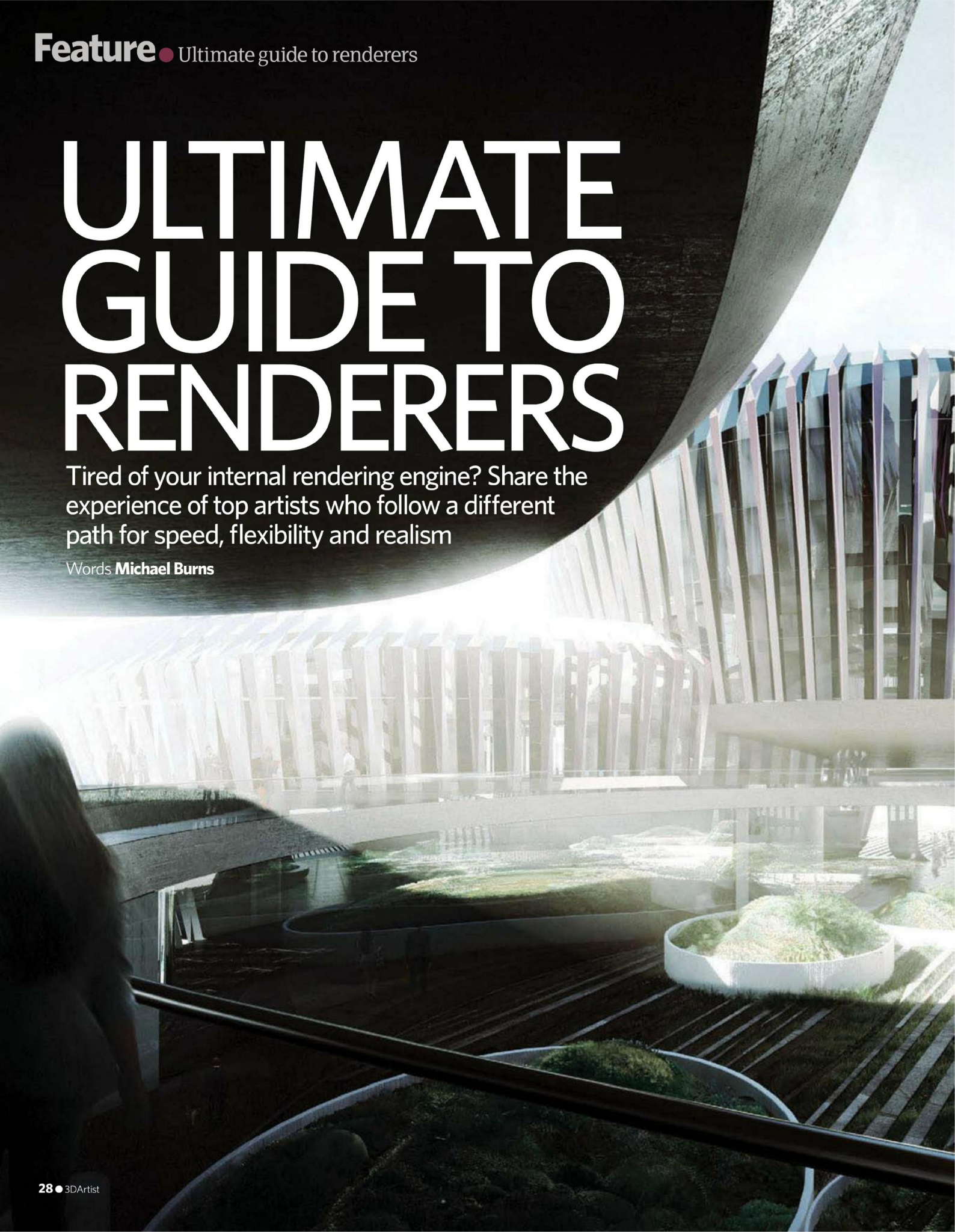


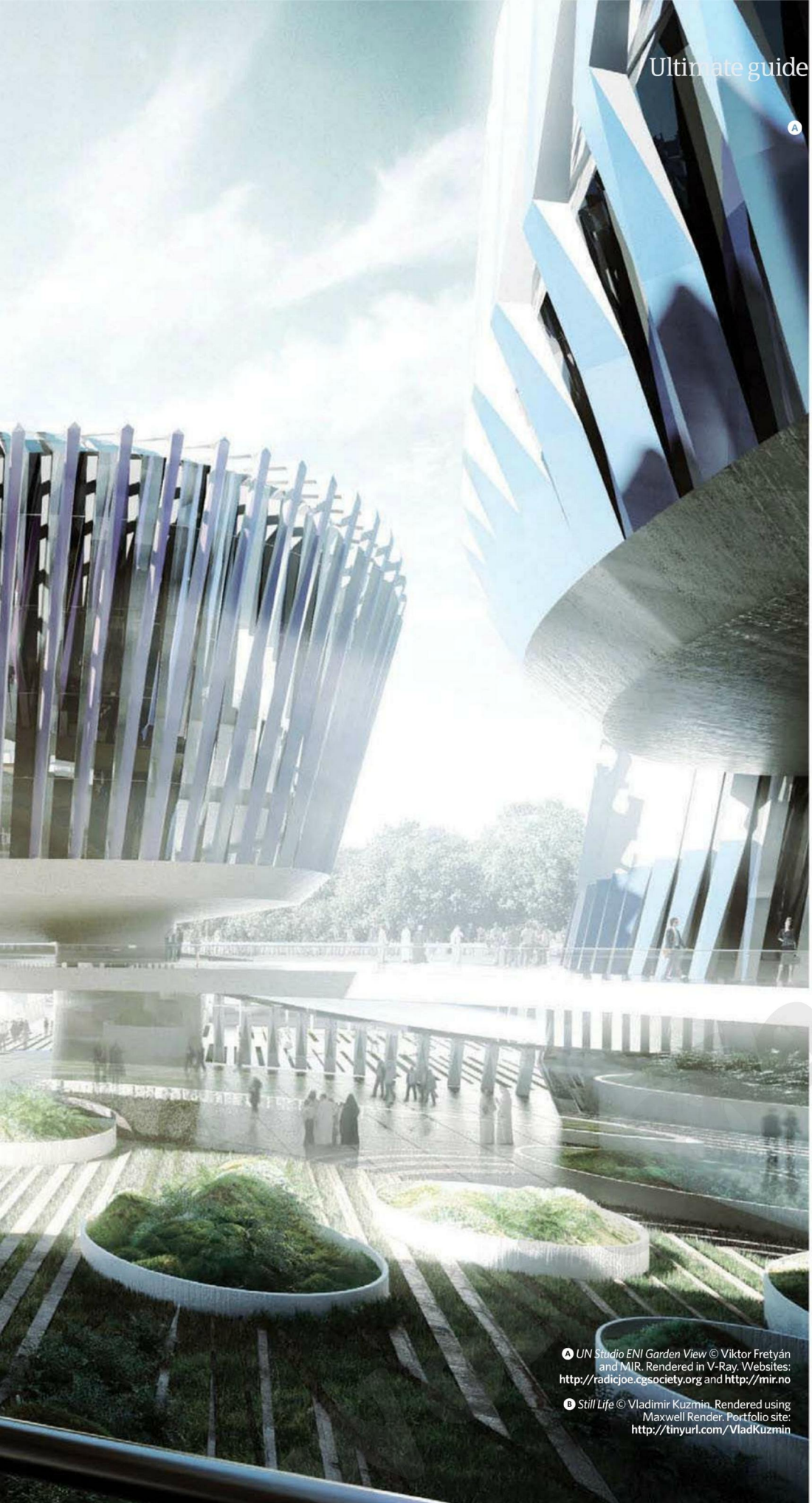
24% Photoshop	7% After Effects	2.5% Vue	2% SketchUp	1% DAZ
15% 3ds Max	4% C4D	2% Blender	2% NUKE	1% Softimage
12% Maya	3.5% V-Ray	2% Poser	2% LightWave	4% Others
8% ZBrush	5% modo	2% Illustrator	1% Mudbox	

ULTIMATE GUIDE TO RENDERERS

Tired of your internal rendering engine? Share the experience of top artists who follow a different path for speed, flexibility and realism

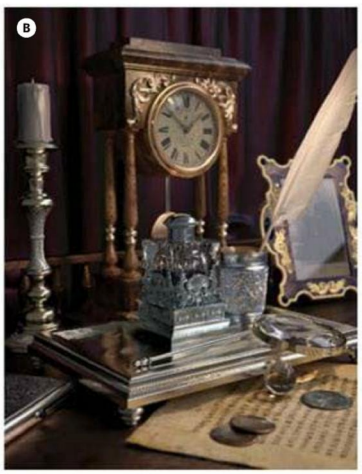
Words **Michael Burns**





Ⓐ *UN Studio ENI Garden View* © Viktor Fretyán and MIR. Rendered in V-Ray. Websites: **http://radicjoe.cgsociety.org** and **http://mir.no**

Ⓑ *Still Life* © Vladimir Kuzmin. Rendered using Maxwell Render. Portfolio site: **http://tinyurl.com/VladKuzmin**



As a 3D artist, sometimes you want something above and beyond your in-built renderer, something that enables more accurate or realistic lighting, or just more power or responsive controls. As a result standalone renderers are becoming more common, often engineered as virtual lighting sets into which you import a 3D model from your normal modelling or animation suite.

VFX studio Lola, which has its own render farm based in London, uses Softimage extensively, integrated with the photorealistic renderer mental ray. "We have a lot of experience with mental ray, and naturally all native Softimage shaders and most proprietary ones integrate seamlessly with it too," says

> "If specific results are required then a renderer designed for that purpose will be better"
>
> **Grahame Andrew, founder of Lola**

Grahame Andrew, MD, CGI supervisor and founder of Lola. "mental ray does most things very well, but if very specific results are required then often a renderer designed specifically for that purpose will be better."

As an example the studio turned to the Arnold renderer. This is a production-quality Monte Carlo ray tracing solution written by Solid Angle and co-developed with Sony Pictures Imageworks. Lola first used it to build realistic hangar interiors for *Richard Hammond's Journey to the Centre of the Earth* on the BBC and has used it on several projects since, including *How the Universe Works* for Discovery. "We use Arnold a lot for global illumination and realistic type renders," says Andrew. "We use it wherever we need to re-create real-world lighting effects, where its real strength lies. However, even in projects where Arnold has been the primary renderer, there is always something that comes up that can be solved more quickly and reliably with mental ray."

COMMERCIAL RENDERER SPOTLIGHT

Key facts about some popular standalone renderers on the market

V-RAY 2.0

www.chaosgroup.com

Price £840 **Educational discount** £67

Areas of expertise Physically accurate global illumination and area lights, interactive rendering, car paint shaders also Fur and Hair rendering

Industries it's used in Arch Vis, Film/VFX, automotive and product design

Software it's compatible with 3ds Max, Maya, Softimage, Rhino and SketchUp

GPU/CPU based GPU

MAXWELL RENDER

www.maxwellrender.com

Price $995 **Educational discount** $245

Areas of expertise Realistic camera model, 3D motion blur, real-time scene previews, Multilight real-time light adjustment, Fur and Hair rendering, Vector displacement and RealFlow integration

Industries it's used in Engineering, product design, architecture, TV, film and animation

Software it's compatible with 3ds Max, ArchiCAD, Bonzai3D, CINEMA 4D, form•Z, Houdini, LightWave, Maya, MicroStation, modo, Rhino, SketchUp, SolidWorks and Softimage

GPU/CPU based CPU

KEYSHOT

www.KeyShot.com

Price $995 **Educational discount** $95

Areas of expertise Scientifically accurate materials, real-time ray tracing, real-world lighting

Industries it's used in Industrial design, mechanical engineering and photography

Software it's compatible with Creo, Pro/ENGINEER, Rhino, SketchUp and SolidWorks

GPU/CPU based CPU

BUNKSPEED SHOT

www.bunkspeed.com

Price $495 **Educational discount** $95

Areas of expertise Real-time interactive ray tracing, global illumination, virtual digital camera, HDRI lighting, physically accurate materials

Industries it's used in Product design

Software it's compatible with 3ds Max, Collada, Rhino, SketchUp, SolidWorks, Wavefront

GPU/CPU based Hybrid-based CPU and GPU

ARNOLD

www.solidangle.com

Price POA **Educational discount** N/A

Areas of expertise Final gathering, global illumination, motion blur, networked programmable shaders, deferred or procedural loading of geometry,

Industries it's used in Film and VFX

Software it's compatible with Maya and Softimage

GPU/CPU based CPU

> "I use Bunkspeed PRO to give directors... a fast, realistic impression of what my designs will look like"
>
> **Daniel Simon, vehicle concept artist**

HRT F111 © Daniel Simon. Rendered using Bunkspeed PRO. **www.danielsimon.com**

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NBBJ Rupp Arena © Viktor Fretyán and MIR. Rendered with V-Ray

Arnold is a CPU-based renderer, while other developers have taken advantage of the power of the GPU. For example Bunkspeed developed its standalone hybrid GPU-CPU rendering tool Bunkspeed SHOT along the lines of a virtual photo studio, offering photorealistic global illumination, NVIDIA iray support and HDR imaging within a design-friendly interface. Adding animation abilities to the mix with Bunkspeed MOVE, it then bundled both products together as the Bunkspeed PRO suite, which as its name suggests is perfect for professionals. A high-profile user of this suite is Daniel Simon, a vehicle concept designer based in Los Angeles.

"The Hollywood production world is very fast-paced, as is motor sports," says Simon. "I used Bunkspeed PRO to give directors on *Tron: Legacy*, *Captain America: The First Avenger*... and industry clients a fast, realistic impression of what my designs would look like. When expensive full-scale prototypes get built, I take material and colour decisions in the software and workshops use my images as built references."

It lends itself to quick turnarounds too. "A film production might hand me a plate from a shoot, and within minutes I can drop my design in there," says the artist.

According to Simon, all you need to use the software is a basic knowledge of how materials and light interact in the real world. He is also very impressed with the "thoughtful animation interface. It's great to see a software house bringing all those pro features to an intuitive level of usage," he explains. "I don't believe in having ten windows open to rig a camera flight."

Another very popular standalone renderer is V-Ray from Chaos Group, which supports a wide variety of 3D applications. Craig Ramsay, who works with 3ds Max and SketchUp for his architectural visualisation and animation projects, uses V-Ray for 95 per cent of his rendering tasks. "Having used scanline, Brazil and finalRender previously, I found V-Ray to be faster and more stable than the others for Arch Vis," he says. "V-Ray really suits my workflow because of the way it handles render elements – I do a ton of work in post these days and I find the V-Ray elements quick and easy to work with. But the best thing about V-Ray is the .vrimg format. It lets me render out really high-resolution images without having to worry about my farm crashing on tight deadlines."

> "Having used scanline, Brazil and finalRender previously, I found V-Ray to be faster and more stable"
>
> **Craig Ramsay, CG artist**

Viktor Fretyán also uses V-Ray for architectural work. "I'm using V-Ray for pretty much everything I do in 3ds Max," he says. " When I switched to V-Ray from mental ray] it was faster and much easier to use. I use it at work for still images, animations and at home for my personal projects as well." However, Fretyán sees downsides in V-Ray's slow rendering of glossy refractive materials, while unwanted blotches and light leaks are another issue.

In a rather different field, Andrew Hickinbottom uses V-Ray with 3ds Max to make his stylised, cartoony characters for illustration and promotional purposes, as well as animation in commercials, TV series and

C *St Petersburg sketch* © Viktor Fretyán and MIR. Rendered with V-Ray. **http://radicjoe.cgsociety.org** and **http://mir.no**

D *Aqua All Red* © Simon Williamson. Rendered with KeyShot. Personal portfolio site: **www.3dartistonline.com/user/SimonW**

E *Naked Earth 010* © Lola for BBC Scotland. Rendered using Arnold. **www.lola-post.co.uk** and **www.bbc.co.uk/scotland**

F *Naked Earth 012* © Lola for BBC Scotland. Also rendered using Solid Angle's application, Arnold Renderer. **www.solidangle.com**

BB Ig Probe © Simon Williamson. Modelling: Rhino, figures: Poser, rendering: KeyShot

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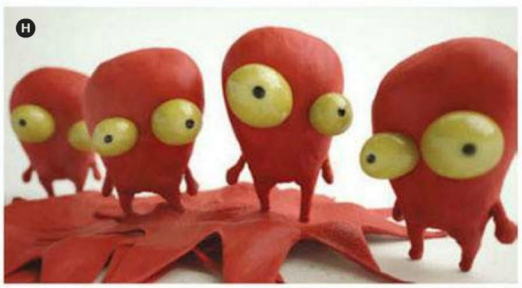

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DOWN ON THE RENDER FARMS

Render farms, banks of CPU chugging away rendering your masterpieces, are now available to all, not just massive VFX facilities

You're a freelancer or a small studio facing a pending deadline, and your CPU just isn't cutting it in the rendering stakes. Don't fear, help is at hand from dedicated companies who offer you time slots on their network of rendering workstations. One such is Render Nation (www.rendernation.com), a company based in Liverpool with a 120-server render farm available on-demand. Costs of rendering a project (for any supported application) is based on the time taken, for example £0.50 per server-hour.

Companies like Render Nation provide a fully managed, budget-conscious service. "An artist can pick up the phone, discuss what they need and when," says Render Nation founder James Mooney. "We then work with them to deliver images or frames back on time and within their budget. Where possible we will always offer advice to optimise the process and reduce costs." However, Mooney warns that render farms can't work miracles. "We've... been asked [if we can] render a scene that crashes... If it's simply a workstation memory limitation, then our machines may be ok; if it's corrupt then there's very little we can do."

So the key thing to remember for more efficient rendering is to repeatedly test. Mooney says: "This makes the process much smoother, and when scenes are left... overnight, we all have the confidence that [they] will be correct the next day."

short films. "I find V-Ray's lighting to be excellent," he says. "I can achieve great results with the minimum number of lights using indirect illumination, whereas I had to create lots of fake lights when I used... the standard scanline renderer."

Clients permitting, Hickinbottom uses V-Ray for all of his work now. "I recently finished a personal piece where I wanted a nice contrast between bright sunlight and shade," he explains. "V-Ray worked really well to help me do this using just two lights: a main sun light, and a small fill light."

Craig A Clark, an artist specialising in hard-surface modelling, is an avid user of Luxion's KeyShot. "I've used it mostly for automotive work, along with some jewellery rendering," explains Clark. "I also used it for rendering some prototype glass bottles. Scenes which are intensive in their requirements for reflections and refractions are an area where KeyShot really excels in terms of sheer turnaround time, from setup to finished render."

Clark identifies another benefit KeyShot has over built-in solutions, as it offers an extensive library of shaders out of the box, which usually only need minor tweaks. "Coupled to the simple drag and drop method of applying shaders, and its sheer rendering speed, it's much better [than built-in solutions] for not only final renders, but interim approval renders."

Simon Williamson, an assistant professor of Industrial Design at Wentworth Institute of Technology in Boston and at the same time a enthusiastic designer, started using KeyShot a couple of years ago after testing and trying a number of high-end, standalone rendering engines. "I was looking for a potential plug-in to complement our teaching of Rhino and SolidWorks," he explains. "KeyShot was straightforward to utilise and helped produce fabulous images for the students without having to deal with a mass of controls – unless required [of course]. It's not common to all renderers, but KeyShot is fabulously direct. It takes one 15-minute demo and there's no holding the students back. Drag in the model, pop on some materials, pick an environment and voilà!"

From that point on, Williamson explains KeyShot merely requires experimentation in terms of composition, lighting, texturing and effects. "We have used KeyShot for just over a year and the difference from previous years is significant," he says. "Output is of a far higher level, within a shorter amount of time, and without a great deal of frustration in terms of interface issues."

Personally Williamson uses KeyShot for both in-progress assessment of concepts,

G *Baxter & Edmund* © Richard Yot. Rendered with Maxwell Render. **www.itchy-animation.co.uk**

H *Duplicators* © Meindbender and Cartoon Network. Rendered with Maxwell

I *PatekPhilippe* © Craig A Clark. Rendered with KeyShot. **www.scorpiocgi.co.uk**

> KeyShot was straightforward to utilise and helped produce fabulous images for the students

Simon Williamson, assistant professor of Industry Design

Sverre Sondresen Kirke – The Last Row © Viktor Fretyán and MIR. Rendered with V-Ray

J

K

Single Light Jet © Daniel Simon and Disney Enterprises, Inc. Rendered with Bunkspeed PRO

J *A Walk In The Park* © Richard Yot. Rendered in Maxwell Render. **www.itchy-animation.co.uk**

K *Custom Truck* © Craig A Clark. Rendered in KeyShot. **www.scorpiocgi.co.uk**

> "The whole Maxwell philosophy is real-world and simple – no tricks and no strange concepts"
>
> **Juan Cañada, technical director, Maxwell Render**

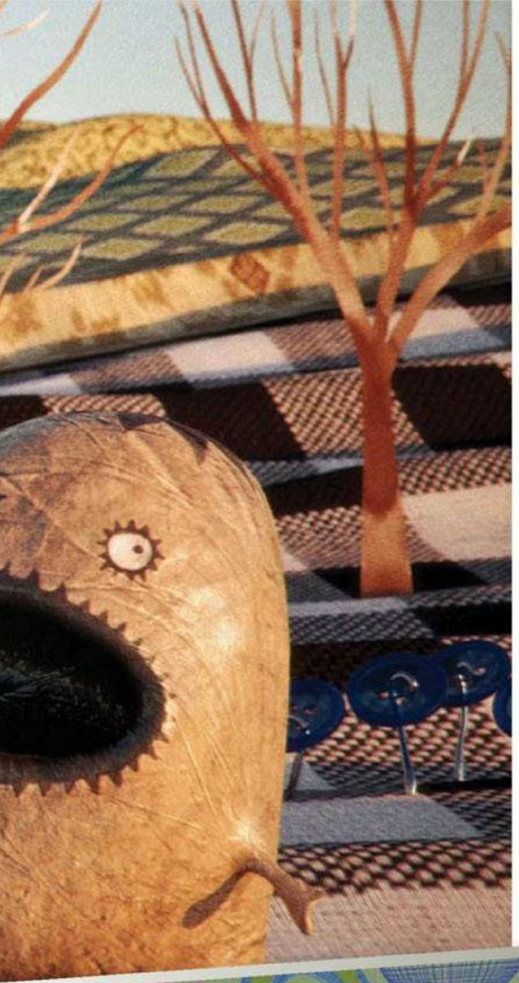
form and detail and for final images. "Both Rhino and SolidWorks have built-in rendering apps," he says "But neither are full-on packages and have issues with producing convincing images. [The most notable] issues are the lighting and environment setups and controls... The more engineering-focused modelling programs don't have the best onboard renderers and standalones do produce more sophistication."

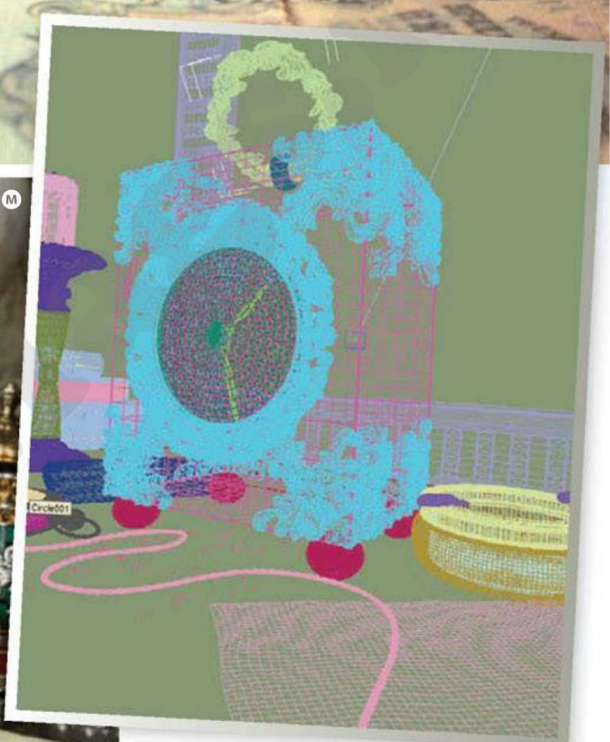
Maxwell Render from Next Limit is another popular standalone renderer. According to its technical director, Juan Cañada, Maxwell Render can adapt to any pipeline, from a basic installation on a single machine to a large-scale, Linux-based farm. "Typically though, users need to install Maxwell and then the plug-in to connect it to their favourite platform," he says. "In a few clicks you are rendering."

Cañada is quite clear on the USP of Maxwell Render. "As well as the high quality of Maxwell Render, it's easy to use," he says. "The whole Maxwell philosophy is real-world and simple – no tricks and no strange concepts. For example the camera parameters, f-stops, shutter speed and ISO, are basically everything that you would find on a real camera. These real-world settings make the Maxwell workflow both reliable and fast, and can also save a huge amount of time in postproduction."

Maxwell Render certainly has its fans. "I use Maxwell when I need that extra little bit of realism," says artist Richard Yot. "It is the most realistic renderer I have ever used."

Yot, who specialises in "quirky characters and hand-made worlds for them to inhabit", bought Maxwell Render in 2010. "I was interested in it as it could produce very realistic optical effects such as bokeh and diffusion, as well as its realistic handling of light and materials," he explains. "It is very different to the built-in render engines. It doesn't use any traditional forms of CG lighting at all, so there are no spot lights, point lights or area lights. All the lighting is physically based so there are no





L *Old Clock* © Vladimir Kuzmin. Rendered in Maxwell Render. **http://tinyurl.com/VladKuzmin**

M *Stil-Life* © Vladimir Kuzmin. Another beautiful and effective scene rendered in Maxwell

Miss Mosh © Andrew Hickinbottom. Created in 3ds Max and Photoshop, rendered in V-Ray. **http://andrewhickinbottom.com**

> [Maxwell] creates shaders of much greater complexity and realism than most other engines
>
> **Richard Yot, animator and CG artist**

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The Hydra Parasit
© Daniel Simon and Marvel Studios.
Rendered in Bunkspeed PRO

GPU AND CPU-BASED RENDERING

Advances in processing technology and programming have moved the GPU front and centre in the race for fast and photorealistic rendering

GPU-BASED

Driven by developments like OpenCL and NVIDIA with its CUDA technology, GPU-based rendering basically diverts some of the computing-intensive and slow programming operations for rendering tasks from the CPU onto the GPU. Modern GPUs can therefore offer accelerated parallel processing across hundreds of cores for speedily crunching dull and repetitive, but essential rendering tasks.

Programs this applies to:
V-Ray (Chaos Group), SHOT (Bunkspeed), Arnold (Solid Angle), finalRender (cebas), MachStudio Pro (StudioGPU), mental ray (NVIDIA/Autodesk)

Pros:
- GPU-acceleration, in particular ray tracing using the GPU, can offer interactive previews when setting up lights and adjusting materials
- The massive amount of cores on modern GPU architecture can deliver near-instantaneous renders, making a mockery of the bucket rendering concept

Cons:
- Restrictions with onboard memory set limitations on cinematic rendering, as do high CPU to GPU latencies if some operations are shared with the CPU
- GPU-based architectures face challenges when handling larger data out of core geometry and texture data sets, as well as custom programmable shaders

CPU-BASED

The computing power of the CPU is harnessed for mathematically crunching the data required for modern rendering tasks. Access to large amounts of system memory enables rendering algorithms such as ray tracing to work on the entire scene in physical memory, while large caches provide the necessary computing power for Monte Carlo ray tracing, global illumination and ambient occlusion.

Programs this applies to:
KeyShot (Luxion), Maxwell Render (Next Limit), RenderMan (Pixar)

Pros:
- Ideal for highly computation-intensive tasks such as ray tracing, motion blur, depth of field, deep shadows, subsurface scattering, colour bleeding and caustics
- Rendering tools can take advantage of advances in multi-core, multi-threaded CPU architectures being developed in other non-related industries

Cons:
- Rendering purely using the CPU, particularly for ray tracing for photorealistic effects within large scenes or animation, can take time
- CPU manufacturers have less specific focus on advancing future renderer technology

> "As soon as some features we needed were in place... we jumped over to Maxwell and haven't looked back"
>
> **Michael Bengtsson, CEO Meindbender**

approximations such as speculars, only real-world reflections. The material system is also physically based and materials are built in layers, much like in the real world, which creates shaders of much greater complexity and realism than most other render engines."

Swedish animation studio Meindbender doesn't use anything else for rendering. "We saw the benefits of a physically correct render engine around 2007, but back then it wasn't practical to use for animation," recalls CEO Michael Bengtsson. "We waited and as soon as some features we needed were in place, as well as computers becoming fast enough, we jumped over to Maxwell and haven't looked back since then. Now we are actually able to bring in traditional photographers and lighting artists that have very limited CG skill, but know the core of their craft very well."

So it would seem that standalone solutions are here to stay, but there are downsides. "KeyShot, and most, if not all, standalone rendering solutions, don't natively support the file format for LightWave," says Craig A Clark. "So if I bring a model into KeyShot, and then for some reason there are changes needed to the model, it has to be re-imported from scratch after the changes and started again in terms of applying shaders. It's not the end of the word, but a mechanism to work around the one way nature if working with it would be great."

Daniel Simon also has an issue with the detached nature of the standalone. "They make you leave your natural model environment whenever you want to see your new model visualised," he says. "But you develop a routine for that and I don't mind. The results make me happy."

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N *Sand Sliasen Duck Hunt* © Viktor Fretyán and MIR. Rendered in V-Ray

O *Arcadia Red Level 16 Heavy Hauler* © Simon Williamson. Rendered in KeyShot

P *Pirate* © Meindbender and CN. Rendered in Maxwell. **http://meindbender.com**

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> Our technology can span all kinds of toy, so the breadth of what we can do is ultra-exciting

Alice Taylor CEO, MakieLab

Name Alice Taylor
Job title CEO
Website www.makielab.com
Location London
About Alice Taylor is the founder of MakieLab, a London-based creative startup aiming to use innovative technologies in previously unthought of ways, to make the next generation of kids' products.

All images © MakieLab

We talk to MakieLab CEO, Alice Taylor about MAKIES, the customisable 3D-printed toy that is set to take the market by storm

MakieLab

MakieLab is making bold moves to revolutionise the toy industry, offering 3D-printed, customisable and game-enabled products that have yet to be seen in this highly competitive sector. The company has been founded by an experienced team with all manner of backgrounds from games design to broadcast production. They have been striving towards innovation by creating a complete user experience, from design to delivery, making the final product completely unique to its owner.

MakieLab is using cutting-edge technology to create the MAKIES doll, its first product, by utilising specialised 3D printing and rapid prototyping alongside the Unity game engine and various online customisation tools. We speak to CEO Alice Taylor about the doll and the techniques used in its creation.

3D Artist: *Could you tell us about MakieLab – who was it set up by, why and with what particular aim?*
Alice Taylor: I set it up in March 2011, with co-founders Luke Petre (*LittleBigPlanet*), Sulka Haro (Habbo Hotel) and Jo Roach (*Nightmare High*). We came together over a shared love of the idea of 3D-printed, internet-connected toys, and a desire to build a new kind of toys-and-games company, one that focuses on customisation, [creating], sustainability, technology and fun!

After founding, we spent some time fundraising, netting our first £200K to get off the ground by August. [S]o by October... we started on our alpha build.

3DA: *What's your studio like? How many people work there and in what positions?*
AT: We have a sunny little rectangular studio within a studio, [sharing the] ground floor of our building with RIG (Really Interesting Group, www.riglondon.com). Our office used to be BERG's HQ, and we took it over as they moved out to expand.

The office is concrete-floored – great for making a mess – and has a workshop at the back, our maker room, which is very important for our needs. We're going to be machining, printing, painting and [doing] all sorts of good things in there.

As for personnel, we're currently 11 in total, if you count our part-timers: four CxOs, one art director (Ed), one 3D artist (Tia), two fashion designers (Tatiana, Jeanne), one graphic designer (Riikka), one software developer (Dan) and one product engineer (James).

> "Because we're using 3D printing, we can iterate on the physical immediately... A product as a service, if you like!"

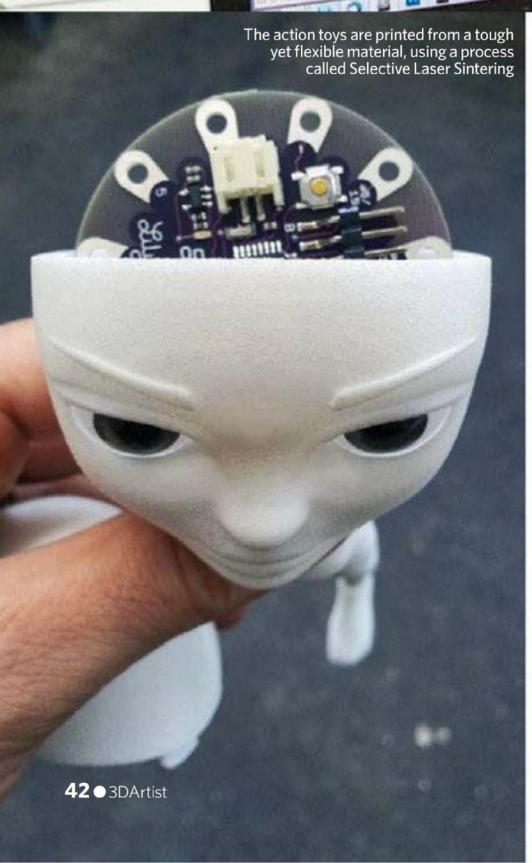
In terms of software we use 3ds Max, SolidWorks, InDesign, Photoshop, Illustrator, Rhino and Unity.

3DA: *Your first product, MAKIES, is nearing its release date – could you tell us a little more about this, please?*
AT: MAKIES is a build-it-yourself action doll, going to alpha in early May 2012. We're releasing much earlier than is usual for physical product, but that's because we can and we believe we should! We want to learn what people like about MAKIES, and what people want to see improved. Because we're using 3D printing, we can iterate on the physical immediately [and] even A/B test physical objects, and ideas: A product as a service, if you like!

MAKIES is targeted at adult crafters, makers, doll collectors and designers, toy fans and roboticists. We want these folks to help us figure out how to perfect the manufacturing and [creation] side of things, and our second as-yet-unannounced product will be aimed at kids [aged about three and above].

3DA: *What inspired you to pursue the route of 3D printing for your products?*
AT: 3D printing did! It's amazing, but has been hiding away for a while. I first got interested in it a few years back, when folks were talking about fabbing and fab labs. But it felt somewhat out of reach and/or a bit too early. By 2010 though, the thoughts were [beginning to crystallise], and it really kicked in for me when I went to the US Toy Fair in NYC. It was [joined] with the Engage Expo... but the digital stuff was in a side area, while the Toy Fair took up [most of the space of the] conference expo. I was in a basement as someone wonderful was talking about their hugely popular digital kids product, and someone at the back raised a hand – Toy Fair badge hanging from their neck – and asked, "But don't you just want kids to go outside and play with a hoop and a stick?" To which I had three rapid and consecutive thoughts: "Two industries smashing together", followed by "why can't they co-exist?" [and then last] "why don't they?"

Customers can customise their figure's appearance – tweaking everything from the feet, facial features and outfits – before purchasing



The action toys are printed from a tough yet flexible material, using a process called Selective Laser Sintering

3DA: *What software do you use to create the dolls? Was there any particular reason you chose these programs?*
AT: Mainly 3ds Max, which is an odd choice for physical modelling, as it's polygon-based; but it means our objects are immediately game-ready. The same avatar can wander around a 3D world [and can also] be printed out into an action doll. Using our secret tech, of course!

3DA: *Is it true that the doll is customisable by the user? If so, how will you enable users to tweak the design?*
AT: Yep. There'll be a bunch of ways, but for alpha, think sliders. Users will be able to resize and reshape eyes, eyebrows, noses, mouths, cheeks, hair, clothes, hands and feet. Once they've finished tweaking, sliding and building they hit Buy, we make that identical action doll and send it.

3DA: *You're using Unity in your workflow, could you tell us a little more about how that works out for you?*
AT: Action dolls are 3D, so our avatars are too! Unity's a great piece of software to work with, and we're in the Flash beta (its ability to output to Flash) too, which means we can release on web,tablets and smartphones.

3DA: *How will it work in terms of clothing – will outfits be sold online or in stores?*
AT: [They'll be] created online, made offline by us and sold. But we're also going to release the figure's vital statistics, so for the crafters out there who want to make their own clothes, we say go for it. We plan to release a pattern book too.

3DA: *Will you be offering 3D-printed accessories as well?*
AT: Yes! Shoes, bags, pets, crates, barrels, sticks, wands, wings, crowns, lightsabers, computers, cars, horses, rollerskates. You name it, we aim to create it.

3DA: *Will there be an opportunity for the kids to colour their own doll, or will this all be predetermined in the selection process?*
AT: By the time we release for kids, they'll be able to choose the doll's basic skin colour (browns, plus fun colours too), and they'll also be able to add fun things like horns or

> “Assume that everything we do is focused on enabling the user to have as much creative fun as we can build for them”

MakieLab's dolls are modelled in-house mainly using 3ds Max. Once built, they can then be 3D printed or imported to a game

tails... We're also building tools to [enable] the creation of clothing, but I can't get into too much detail on that yet. Assume that everything we do is focused on enabling the user to have as much creative fun as we can build for them.

3DA: *Do you print test runs of the dolls through your own 3D printers, such as a MakerBot or RepRap, or do you outsource?*
AT: Actually we outsource, but because [with] the action dolls we're using a nylon through a process called Selective Laser Sintering (SLS). That's the white, tough and flexible stuff on Shapeways, and the machines required to perform SLS are big and pretty expensive, unlike the MakerBot, RepRap and their FDM (Fused Deposition Modelling) friends. We have a Thing-O-Matic though, and we love it, plus two Replicators from MakerBot Industries arriving. FDM is great fun, cheap, cheerful, multicoloured ABS plastic, a bit rough around the edges, but so fun.

3DA: *What are MAKIES dolls made of? Could users change the material?*
AT: They could! The SLS process also enables printing in metal, for instance. They could have a titanium one if they wanted, but it [would] cost a lot of money. Still, we've found prices have come down about 20 per cent just in the past year, and machine prices are dropping too, so while it's early days now, the future's looking amazing for this kind of process and the materials available. I have fond dreams of small robotic terminators with cute hair.

3DA: *What's the reaction been from the kids (and their parents) so far?*
AT: Kids just love MAKIES, but we have a responsibility towards kids that we don't with adults. This is primarily toy safety testing and online COPPA requirements. But we know kids are going to go crazy for this stuff, they're so creative and are fearless when it comes to having a go. Another common reaction is from parents of little girls, who are just desperate to find a cool doll that isn't [really pink and skinny]: they love what we're doing.

3DA: *What are your hopes for MakieLab? Do you have a vision of the future?*
AT: Absolutely. In 30 years' time, we'd like to be as big as LEGO. In the meantime, we plan to open workshops... globally. Our technology can span all kinds of toy so the breadth of what we can do is ultra-exciting.

I made this...

Incredible 3D artists take us behind their artwork

Artist info

Rune Holst Månsson
3DArtistonline

Website www.maans.dk
Country Denmark
Software used Maya, After Effects, Photoshop

"The small fish are instances of the big fish. There are two textures used: one bluish and one yellowish. The small fish were placed manually by displacing vertices. I hope to pick up some tricks during the next years of school [to make this] easier"

Software used in this piece

Maya | After Effects | Photoshop

Henson's Greek Fishmonger 2011

The image was created as part of a school assignment at The Animation Workshop in Denmark. [For] *Project 4550*... we had to create a Mediterranean villager in a style reminiscent of Jim Henson's designs. I chose to do a Greek fishmonger. This was actually my first Maya project ever!

"I've never modelled a natural character before and had a lot of trouble with the topology. [S]ince we also had to rig the figure to pose him, the bad topology... had to be corrected in Photoshop"

> The background was tinted slightly orange by using the Depth map on an adjustment layer with a tint effect. Particles and grain were added in Photoshop

> Final colour correction was done in After Effects with simple curves. I added some subtle light shafts from the window using a CC radial fast blur on an inverted matte of the alpha channel, and set the blending mode to Add

> The ice cubes in the scene are all hand-placed subdivided boxes with a subtle lattice modifier applied to them for a noisy surface. The puddles of water are simple plane extrusions with a refraction material

Making of 'Tesla'

Tesla 2012

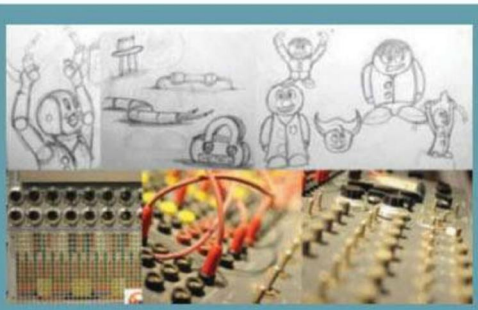
> Tesla was made in honour of one of the greatest inventors of the 20th Century, Nikola Tesla

Toni Bratincevic is a professional environment modeller currently working for Blizzard Entertainment's cinematic department

In this tutorial I will show you the process of creating my *Tesla* image, with a focus on areas that deal with materials, lighting, rendering and compositing, since these are the most important aspects of the image – modelling was relatively simple to do.

We will discuss the tools I prefer to use, and those that I've found to be the fastest for my workflow, including 3ds Max, V-Ray, Photoshop and ZBrush. I will talk you through techniques to speed up the rendering of depth of field (DOF) and motion blur in V-Ray – this greatly helped in the making of *Tesla*, because I was using a strong in-camera DOF effect to achieve a nice composition.

I hope you will find these insights into the making of *Tesla* useful – it was a fun image to create!



Concept

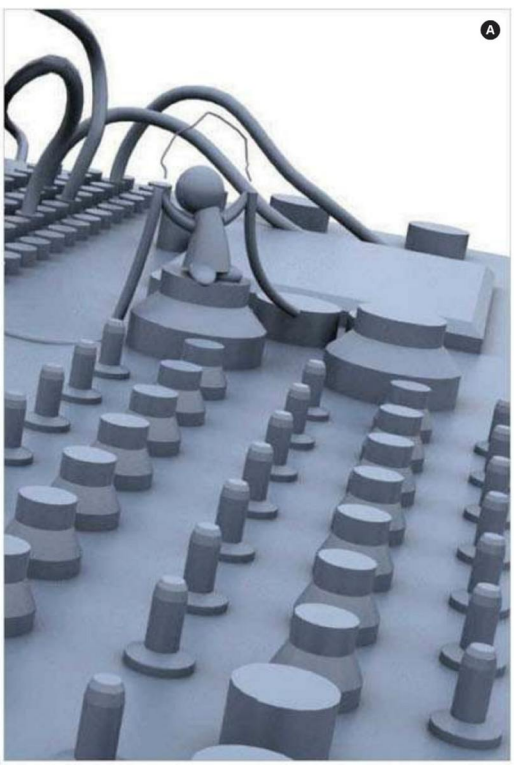
Tesla started from some photographs I took while visiting a computer art museum in San Francisco. Inspired by these photos, a concept was born, so I made a quick layout and drew some small sketches on paper

Software used in this piece

3ds Max · V-Ray · Photoshop · Fusion · ZBrush

Modelling

Sculpting the basic models



Ⓐ Simple geometrical shapes used for the basic layout

Ⓑ Modelling high-res objects based on the initial layout

01 Block in a basic layout When I start a new image, I create a base layout to define the camera angle and models using simple shapes. This gives me an overall feel for how the image will develop, and what will be exposed to the camera so I don't spend time modelling objects that won't be visible. This is one of the most important steps, since from this point on I organise my tasks based on the layout, which makes it easier to predict how long it will take to complete the image. I try not to go into detail here since I won't be using these objects later – they only serve as a placeholder for the high-res models Ⓐ.

02 Detailing and modelling The modelling part was a relatively easy task since I was modelling objects from a reference photo. One thing I really cared about was topology, because my intention was to apply a Turbosmooth modifier to get nice, rounded surfaces. As with most models that I create, I start from basic objects – like a box – and, using the Cut, Extrude, Connect and Chamfer tools, I detail the models. Objects like the large control knob were started by creating a profile line and applying the Lathe modifier.

I began in 3ds Max, creating basic shapes for proportions, and then exported them as OBJ files into ZBrush. There I subdivided them a couple of times and, using brushes like Standard, Dam Standard, Pinch and Smooth, I sculpted the face, body and clothing Ⓑ.

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Toni Bratincevic

3DArtistonline

Username: InterceptoV

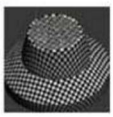
Personal portfolio site
www.interstation3d.com

Country USA

Software used
3ds Max, V-Ray, Photoshop, Fusion, ZBrush

Expertise My areas of interest are environment modelling and lighting. I especially enjoy creating realistic scenes with a story that supports the meaning of the image. Science-fiction and fantasy themes are the most inspirational in my work

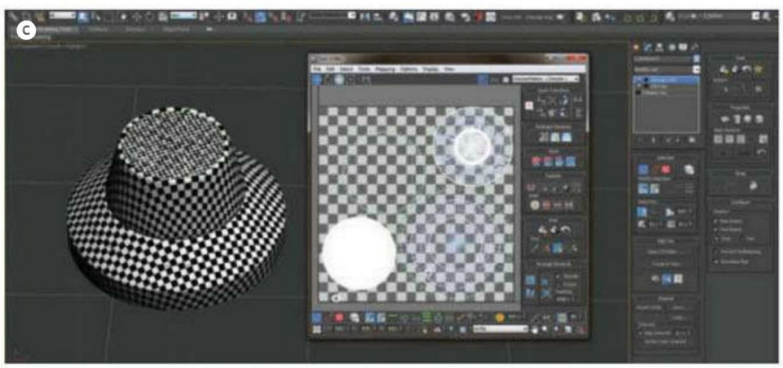
Materials
Textures
Lighting
Rendering

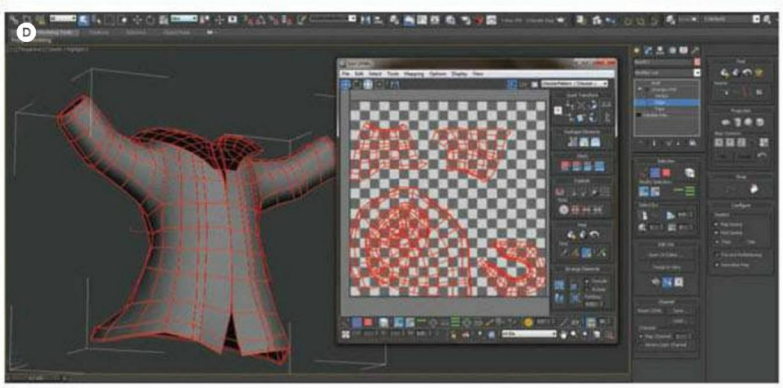


Realistic materials and textures

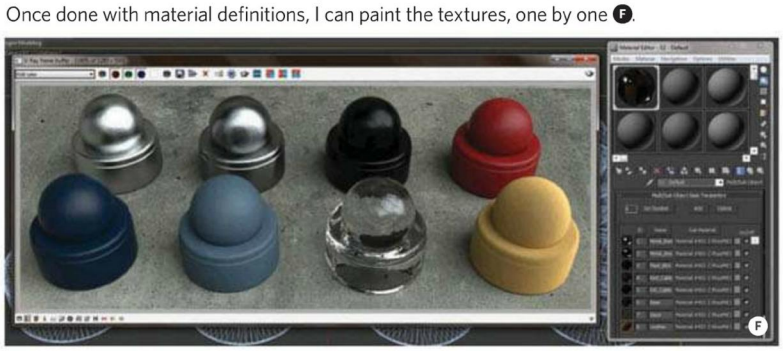
Realism comes from quality materials and textures interacting with light

03 Defining UVs Having proper UVs was important because I planned to texture most of the objects using painted maps and Photoshop. For example, for the large control knob I used mostly cylindrical UV projection and some planar mapping – as the shape of the button is simple I didn't have too many problems unwrapping. For the character, I used the ZBrush UV Master plug-in to unwrap it. In the Unwrap options, set Symmetry to off and select 'Use Existing UV Seams' to keep UV seams created in 3ds Max. I then click Unwrap and ZBrush creates a nice unwrapped UV layout of the objects. I check how ZBrush unwrapped the object by clicking Flatten in the UV Master options. Once I have nice UVs, I can start sculpting the objects C D.





05 Define base materials The best way to play with materials and define their appearance is to do simple material setups without detailed textures to define the basic properties, like diffuse, reflections, glossiness etc. To keep things organised I keep materials grouped inside the Multi/Sub-Object material node so that I have all materials in one place – by simply changing the material ID I can quickly change the material assignments on objects. I try to use one Multi/Sub-Object material for one object, but there are cases where I texture almost complete scenes with one Multi/Sub-Object material. Once done with material definitions, I can paint the textures, one by one F.



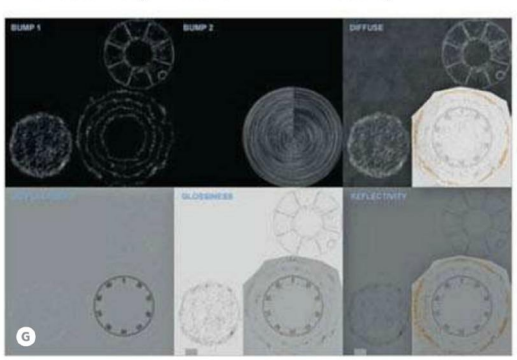
04 Linear workflow Setting up linear workflow is a basic step before texturing and lighting. It's the correct way to deal with gamma-corrected textures and final image rendering. Most textures found online (particularly JPEGs) already have baked gamma 2.2 in the image, so these need to be corrected back to linear response curve. There is a way to do this automatically inside 3ds Max's Preferences, but I like to do it manually inside the material for greater control. When I create a new V-Ray material I put a Color Correction node inside the diffuse part of the material and set gamma to 0.454, so that everything plugged into that colour correction gets inverse gamma. In Render Setup, under V-Ray: Color Mapping, I also set the type to Linear and Gamma to 2.2 E.

C D Most of the objects needed good UVs for texturing and displacement maps

E Textures were colour corrected with gamma 0.454

F Basic material definitions grouped under Multi/Sub-Object material

G Textures used for the large control knob were painted in Photoshop



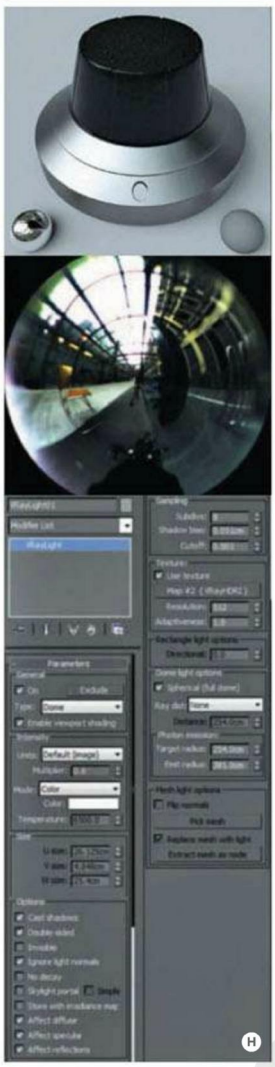
06 Painting textures Textures – along with lighting – play one of the most important roles in achieving realism. In this case, I painted some textures as 6K maps to hold all the details. Diffuse, bump, reflection intensity and glossiness maps were painted to get accurate definition of materials. The large control knob used even more painted maps to achieve the look I was after. Adding small imperfections to your textures is crucial, since this is one of the things that will help a scene to look 'real' G.

Extra details

Details can make all the difference

07 Basic light setup

To test materials I usually create a simple HDRi lighting setup solely for this purpose. This is something I use on every project and for every object I model/texture, since keeping the lighting as something constant makes the process of texturing easier – everything will be unified regarding the value of materials, and once these objects are brought into the final scene they will be balanced and work together. This setup was not used in the final render of the scene H.



Details in materials and textures make a big difference – although they may not be visible at first sight

I

08 Details make a difference

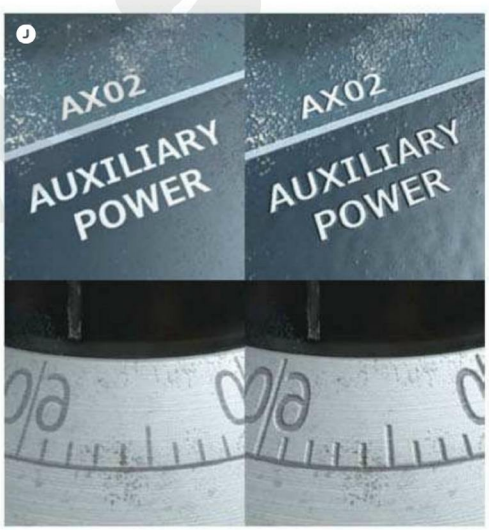
I find it very important when trying to achieve extremely realistic images in 3D to make sure every detail is taken care of. Small things like dust on knobs, or small differences in reflections on the object need to be painted and integrated into materials. Bump maps are one of the main areas for adding these imperfections. Textures should be painted in high enough resolution to hold up, even when rendering high-res images, and that's the reason why most of the time I try to paint 4K-plus images for objects. For small objects, 1K should be enough, especially if the object is not in the main focus I.

Problems and solutions

One thing I try to avoid when modelling scenes is sharp edges – because, in reality, it is almost impossible to find perfectly cut surfaces. Every single model has some small modelling imperfections, and using the noise modifier on some models really helped me to introduce noise into surfaces. This will be reflected onto materials since even shading will react differently – especially on rounded edges where nice speculars will become visible!

09 Displacement

While most modelling details were done in 3ds Max, I used 2D displacement for a couple of objects, including the large control knob and base surface, for extra detail. Since I had all UVs defined for objects, I used 2D displacement as it's more detailed and faster than 3D. As 2D displacement is limited to one UV channel, maps based on that UV are used for displacement. In the displacement modifier I set the resolution to 4,096 and put texture in the Texmap slot. For the big control knob, displacement was used for the numbers and small lines, and on the base for small dust particles and displaced text J.



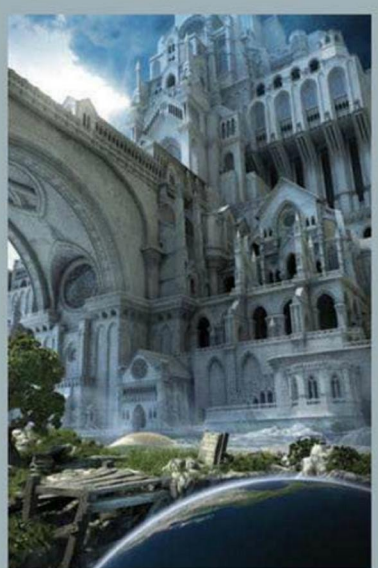
H Basic lighting setup for testing materials and painting textures

J Displacement on the control knob and surface gives extra detail

Artist showcase

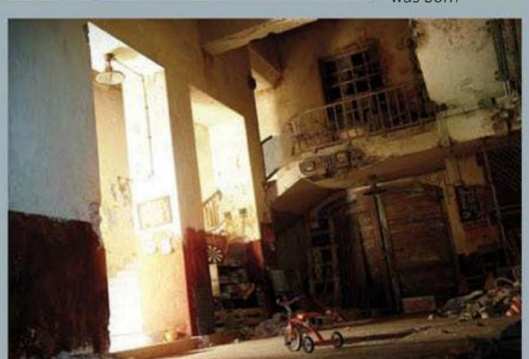
Toni Bratincevic

Here is a series of images I made for personal pleasure using 3ds Max and Maya. I tend to produce at least two illustrations during a year. Most of my images start as a small story and materialise into an illustration to support that story.

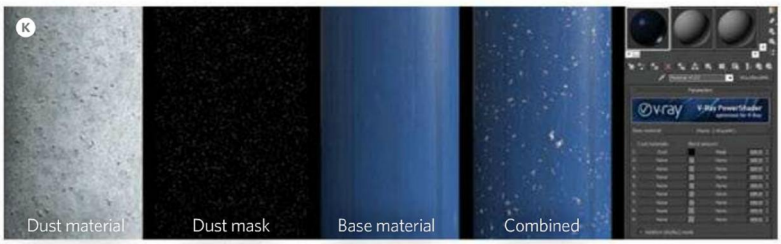


The World Above **Maya, ZBrush, Fusion, Photoshop (2006)**
A world above ours where gods once lived, but they abandoned it when our universe started to collapse...

It Was You **3ds Max, Maxwell Render, Photoshop (2007)**
Dedicated to my wife Martina, this tells the story of a vision I had when I was young, at the moment she was born



Dawn of Balance **Maya, finalRender, Photoshop, Fusion (2005)**
Memories are all that matter in life; we go to them in our minds to feed them with fire so they burn as long as we live



10 V-Ray Blend Material Some of the materials in this scene used V-Ray Blend Material to further increase their complexity. For example, the material for the cable used a first material to simulate a plastic look, while all of the dust on that plastic was made as a new material on top of the basic one. A special mask was painted to define areas where the dust material should appear and where plastic would be. This mask was also used as a bump in the dust material so it appears like small, dusty particles on top of the plastic surface. V-Ray Blend Material can be very useful for adding things like text or signs on top of the basic material – it's easier workflow than trying to integrate everything into one material K.

Inspiration from reality

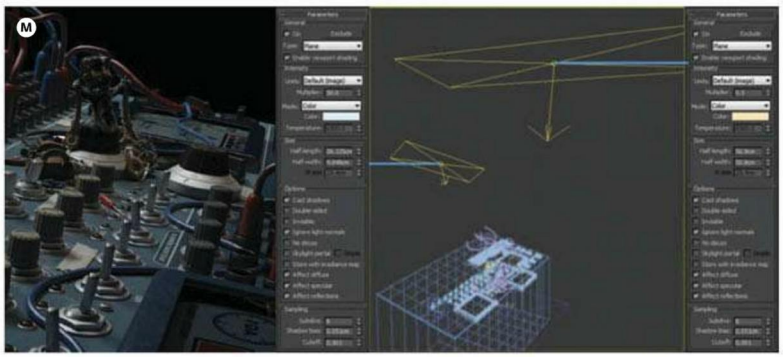
Photo references are the best source to learn about material behaviour and how to reproduce it in V-Ray. Unfortunately, when browsing online you may find only a few references for the materials you're trying to replicate. So it's crucial to get a camera and shoot as many references as you can, from different angles, and if possible under different lighting conditions. Materials from reality can be deconstructed into maps in V-Ray Material and tested to see if they behave in the same way. With experience, ideas of how metal, concrete, glass etc reacts to light will be clearer, and it'll take just a few minutes to get base materials ready.

11 HDRi setup I used a couple of types of lights in this scene, but I started by setting up basic HDRi lighting that gave me nice reflections and fill light in the scene. For that, I used V-Ray's Dome light with an HDR image from my library – I tried several HDR images before I decided on one. As for the settings in V-Ray's Light, I turned off Affect diffuse and Affect specular, because in the end I decided to use the HDR only for reflection, since direct lighting was giving me some nice, intense lighting L.

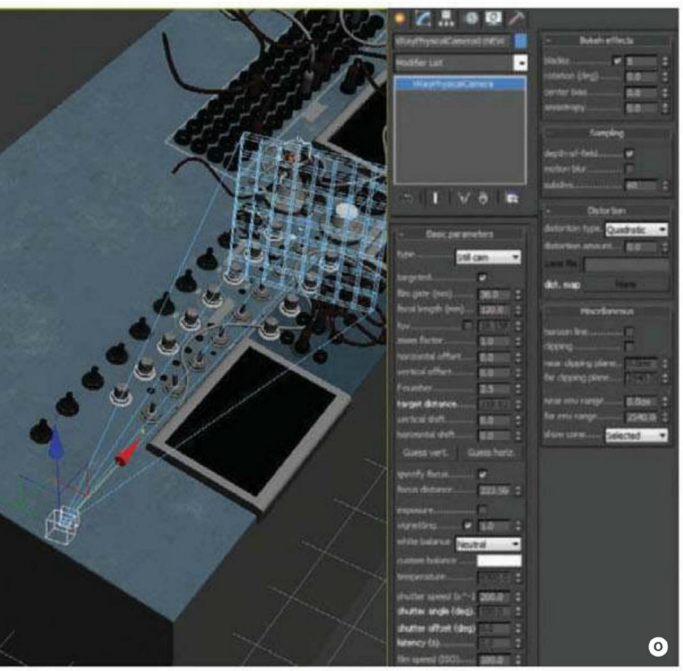
Setting up convincing lighting

Lighting is where the image comes to life

12 Direct lights After the HDRi setup I began adding additional lights into the scene to introduce more contrast and brightness. I used two V-Ray plane lights, giving more focus to important parts of the image. I used basic rectangular lights – one with a warmer colour and another one with a cooler bluish tone. These lights gave me soft shadows because they were relatively large. A quick way to tweak placement and intensities is to use VRayRT to get feedback in real time. Usually, I apply a grey shader to everything in the scene, and switch to Active Shade using VRayRT. Once V-Ray translates the scene it will refine the image in real time, and I can start playing with lights, moving them and changing sizes and colours (M).



13 Electricity As I wasn't sure about the intensity of electricity in the scene, I decided to separate this as a new render pass and composite it in Fusion. For the electricity, I used geometry made in the modelling phase. This was also a V-Ray light, but created using VRayLightMtl. I wanted more control over the shape of the electricity, so I decided to make the electricity not visible to the camera, but left it visible in the reflection. A separate electricity shape was painted in Photoshop and composited in Fusion on top of everything – it was easier to make changes and tweak the shape this way, once the image was rendered (N).



(K) V-Ray Blend Material was used on cables

(L) V-Ray's Dome light with HDRi used for reflections

(M) Direct light setup using two plane lights

(N) Mesh with VRayLightMtl

(O) Physical camera setup

(P) Irradiance mapping and Light Cache setup

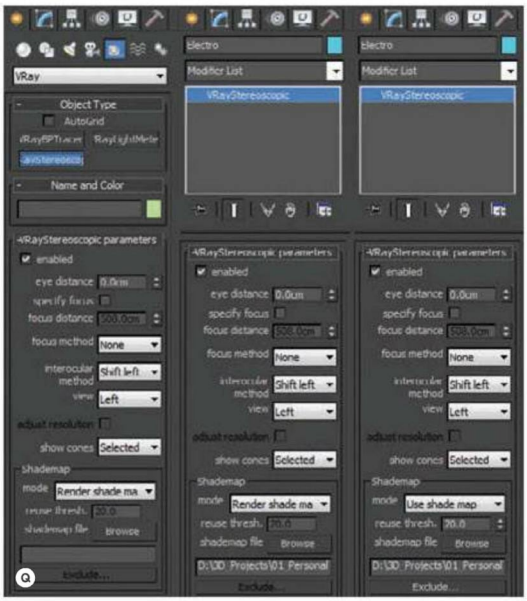
14 Physical Camera As with every project I do using V-Ray, I used a Physical Camera. It's one of the most advanced cameras available in 3ds Max and if you know a little bit about photography and how exposure and DOF works, it can be easily translated into V-Ray's Physical Camera. In the camera I turned on DOF and set the focal point; the focal distance was tweaked from a perspective view where I was able to precisely set it onto the face of the character. By default, exposure inside V-Ray's camera is set On and based on settings it will change, so I try to avoid dealing with this by keeping it off and using colour mapping inside the render setup to get the correct exposure (O).

15 Indirect illumination Indirect illumination was used to add another layer of light bouncing and to define light distribution. The combination I used in this case was the Irradiance Map for primary bounces, which was set to use High Settings; Light Cache for secondary bounces was set to 1,000 rays. Light Cache is especially useful when speeding up glossy reflections. 'Use light cache for glossy reflections' turns this feature On, and basically uses Light Cache as an approximation of lighting fed into glossy reflection rays. Since glossy reflections are usually blurred, it doesn't require high-quality information about the scene's lighting (P).

Photorealistic rendering

V-Ray's advanced features push this image to the edge

8 hours render time Resolution: 4,219 x 6,000



16 V-Ray Shade Map V-Ray's shade map was made for stereoscopic rendering, but can be of great help when dealing with true camera DOF and motion blur. The idea behind it is to render a scene without any DOF and motion blur effects, saving these rendered points into a 3D point cloud map, and finally rendering the complete image with DOF and motion blur while reusing the point cloud data calculated in the first pass. The process is simple: I create a VRayStereoscopic modifier, set view to Left, eye distance to 0, turn specify focus off, set mode to 'Render shade map', save the filename and click Render.

Effects like DOF and motion blur will be automatically turned off while doing the shade map pass. Once the render is done, I change V-Ray's stereoscopic modifier from Render to Use and point to the file where a shade map was calculated. With shade map ready, the final render was almost four times faster! Q

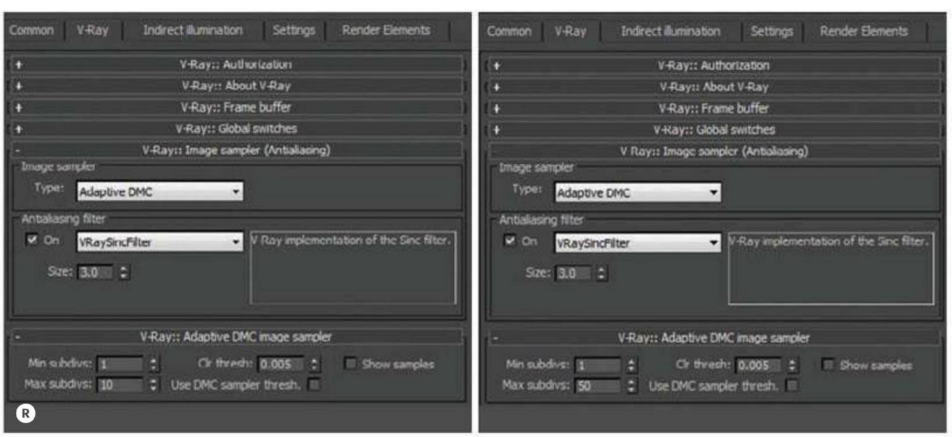
Q Shade map modifier setup

R DMC settings for shade map and final render

Applying VFX in Fusion

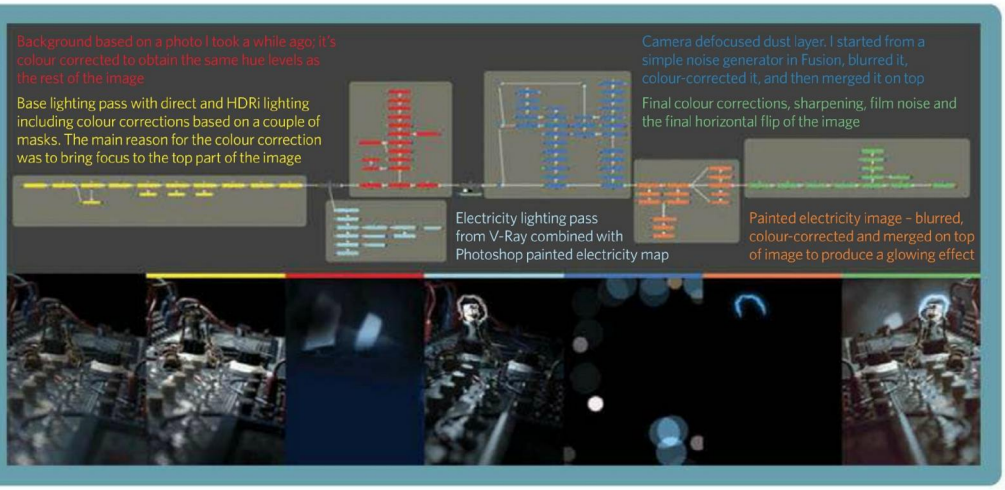
Trying to get the perfect colour balance directly from V-Ray is very time-consuming, and often I avoid pushing it too far in 3ds Max because I know that with Fusion I can completely reshape the image. Straight renders out of V-Ray often look less than satisfying, relatively flat and uninteresting, but with just a few colour corrections and masks it's possible to boost the image quality by an additional 20 per cent. The reason I prefer Fusion is because it has a completely non-destructive modular approach to compositing.

17 DMC settings DMC influences every single subdivision value in the scene, so the render can change quite a bit, and in unpredictable ways. Sometimes it can be non-intuitive because by changing the maximum subdivisons in the DMC settings from 4 to 10, it's possible to get an even grainier image. With that in mind, and with some tweaking, I decided to use the settings shown. When I was rendering the shade map I used lower settings, but for the final render I used a Max Subdivision of 50 to get a clean result. A detailed tutorial on the DMC sampler can be found on my website R.



Postproduction

Tesla was rendered as two separate images so I could easily overlap and tweak the contribution of both images in Fusion. The first pass included HDRi lighting combined with direct lights, and a second pass was rendered with lighting from the electricity. Both were brought into Fusion, merged, some colour corrections were used to get a good balance, and then electricity was painted in Photoshop. Grain and overlapping, defocused dust was also added at the end of the compositing tree to make the image look more realistic, as though taken using a camera with a dirty lens.


Background based on a photo I took a while ago; it's colour corrected to obtain the same hue levels as the rest of the image
Base lighting pass with direct and HDRi lighting including colour corrections based on a couple of masks. The main reason for the colour correction was to bring focus to the top part of the image
Camera defocused dust layer. I started from a simple noise generator in Fusion, blurred it, colour-corrected it, and then merged it on top
Final colour corrections, sharpening, film noise and the final horizontal flip of the image
Electricity lighting pass from V-Ray combined with Photoshop painted electricity map
Painted electricity image – blurred, colour-corrected and merged on top of image to produce a glowing effect

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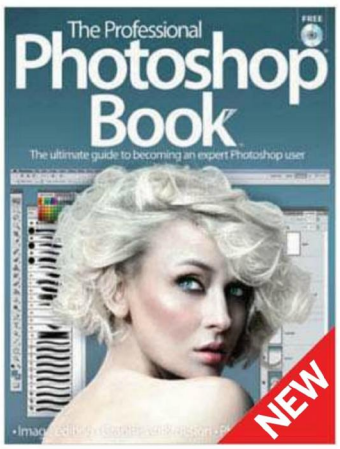

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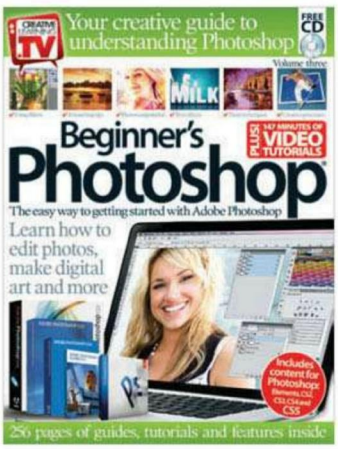
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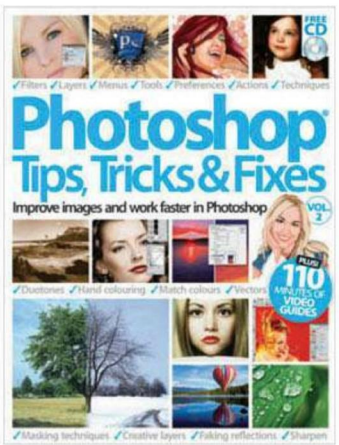

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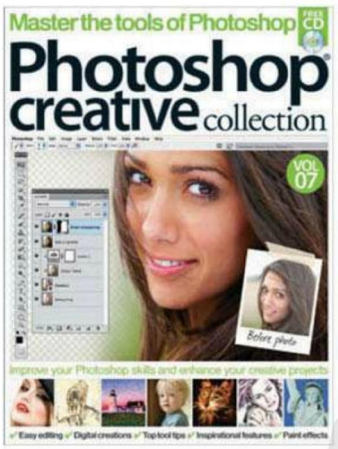

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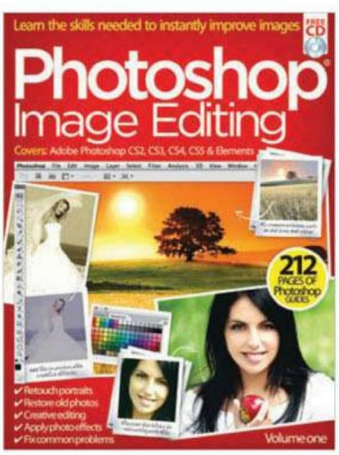

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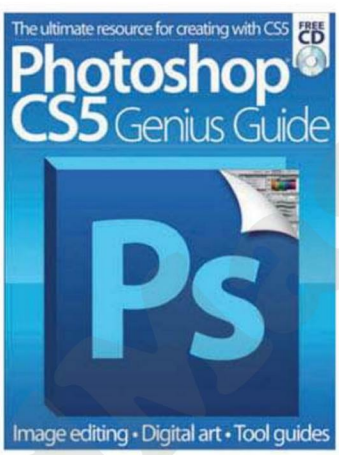

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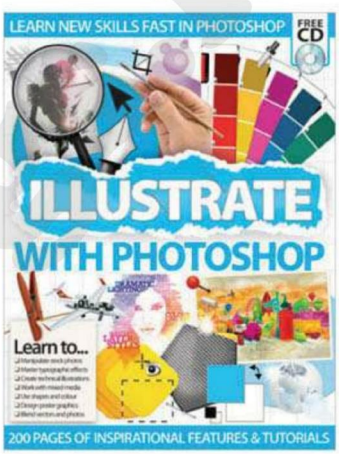

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Artist info

Damir G Martin
3DArtistonline

Website
www.damirgmartin.com
Country Croatia
Software used ZBrush, 3ds Max, Photoshop

Software used in this piece

ZBrush | 3ds Max | Photoshop

Carnotaurus 2012

I'm a big fan of paleo-themed artwork – essentially, anything related to dinosaurs. I'm also lucky enough that my interests are part of what I do for a living. This particular image was the result of a commission by the publishing house Sol90; I was asked to create a breed of dinosaur called a Carnotaurus for them. My biggest accomplishment on this project was finishing it and receiving positive feedback – it's why we artists create art to begin with.

> The biggest challenge with any image such as this... is to keep it consistent throughout all the points of creation. It's important to keep your perspective and move away to keep control over the whole image

> I always try to create images that transport the viewer back in time, providing a feeling of what it might be like back when dinosaurs ruled the Earth

> With every project... I always try to improve my artwork and expand on my skills. In this case I learned more details about dinosaur anatomy so my next project could result in an even better and more accurate rendition

Texturing
Lighting
Rendering

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Yasin Hasanian

3DArtistonline

Personal portfolio site
http://superhero.cgsociety.org

Country Iran

Software used
Maya, ZBrush, mental ray, Photoshop

Expertise Yasin specialises in modelling, texturing, shading and rendering. He works in the game and film industries and has a passion for character art.

Software used in this piece

Maya ZBrush Photoshop mental ray

On the Disc

Two ZBrush brushes

Photorealistic food

Aroma 2012

Achieve realistic textures, materials and lighting for a tasty digital dish

Yasin Hasanian is a CG artist and freelancer

***Aroma* was a great opportunity for me to challenge myself and expand my skills.** Rather than sculpting my usual freaky creatures, I decided to have a go at creating realistic-looking food.

This tutorial will be divided into sections: the first will look at gathering references and briefly discuss the modelling stages. Since the main drive of this guide is texturing and rendering, we will look at these in a little more detail before moving to the compositing stage.

One of the main challenges of this project was to ensure I captured the right mood for the scene. If you look at food photography, you'll find that the camera focus plays a big role in close-up shots – particularly in dreamy bright scenes where you have lots of light pouring in or light can be distinguished from other properties.

In terms of software I used Maya for scene setup, ZBrush for sculpting, mental ray for rendering and Photoshop for texturing and postproduction. However, the ideas and workflow covered in this tutorial can also be applied to other packages.

Build a concept

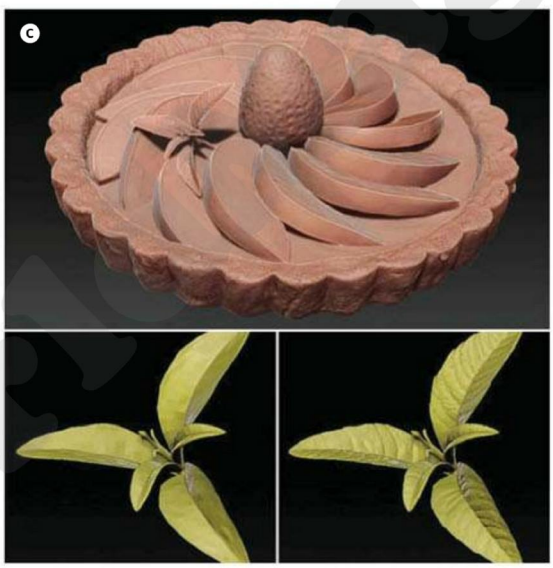
Find examples to inform your work's realism

01 Gather references The first thing you always need to do is gather references for your work. Without them you are relying on your imagination. When it comes to creating something that is photorealistic, you need to have those references to ensure you capture everything correctly. The risk is always getting something wrong and because you are dealing with an object that people are used to seeing, the errors jump out immediately. Photorealism isn't a forgiving form!

The plan

My inspiration originates from how elegant close-up shots of fruit or other food can be. Usually fruits treat light in different ways. Some absorb light, some reflect, some refract and most combine all these at once.

02 Search for detail Since I was trying to make the piece look as convincing as possible I found a lot of fruit-related references. I tried to observe any surface qualities I could find of strawberries, seed orientations, peaches, scatterings of light and so on. From there I roughly planned the pipeline B.



03 Start to model The modelling stage was a pretty straightforward process. Hard surface objects were created in Maya whereas natural ones were sculpted in ZBrush. For the strawberry I decided to create a few seed brushes in ZBrush, which are included on this issue's disc. You can use these brushes to stamp seeds onto the surface of the strawberry on a different layer and they can save a lot of time C.

A References are your friend

B Use detailed references of fruits that display good surface qualities

C Working in ZBrush

Artist showcase

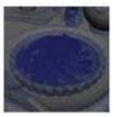
Yasin Hasanian

I'm a 21-year-old CG artist who also works as a freelancer. I got attracted to CG almost six years ago and since then I haven't let it go. Aside from personal works I have worked on TV advertisements, TV series, movies and also games. I study computer science and my ultimate goal is to work for the top companies.

Say Cheese to The World **Maya, ZBrush, BodyPaint 3D, Photoshop, mental ray (2010)**
The inspiration for this came from a painting I found by chance. I used Shave and a Haircut and p_HairTK for the fur. There are roughly 13 million hair prims divided into five hair systems.

I Used to be a Hero **Maya, ZBrush, mental ray, BodyPaint 3D, Photoshop (2012)**
Maya was used for scene setup, ZBrush for sculpting, BodyPaint 3D for texturing, Photoshop for texturing and compositing and last rendering was done in mental ray.

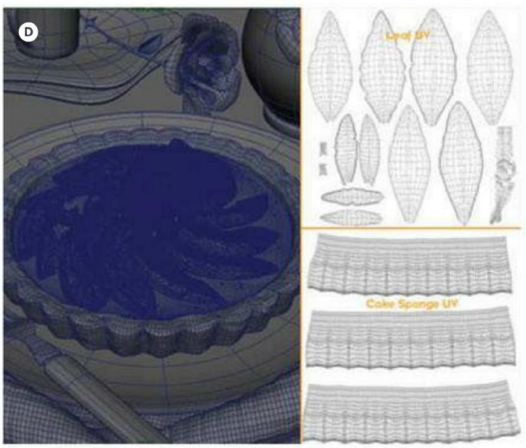
Miss Mutation **Maya, ZBrush, mental ray, Photoshop (2010)**
The model is Ophelia Overdose. Maya was used for the base mesh and scene setup, ZBrush for sculpting, Photoshop for texturing and final touches, mental ray for rendering and compositing in NUKE.



Let the lights in

Get the right tonality and a suitable mood

04 Set up the scene Because this image was meant to be a stillframe, I didn't need to make the most of the Decimation Master plug-in thanks to the help of a normal map. Nonetheless some objects, for example the cake sponge, only have both normal and displacement maps. In some conditions you may experience viewport slowdown after importing some high-res geometries. To overcome such issues you can always export high-res geometries as a MI (render assembly) file format and treat it as a render proxy D.



05 Edit lighting Before I actually began texturing models I created a temporary lighting setup to get the overall mood for the scene, because it renders much faster and more efficiently. The first thing to manage was setting up the scene, meaning applying all the normal or displacement maps if applicable. All objects were given mia_material_X_passes as no other shader can beat them in accurate behaviour. Usually I keep the lighting setup on a separate render layer which has a grey material (mia_material) override in order to adjust lighting later more easily E.

06 Use the linear workflow After setting up the scene the most crucial factor not to overlook is LWF (linear workflow). In the recent versions of Maya there are LWF features but I can never get them working the way they should. It's best to assign a lens shader to the camera and a gammaCorrect node to any textures or colour swatches (RGB channels). Regarding shaders and lights, even blackbody or cie_d nodes produce RGB values rather than Kelvin Color Temperatures therefore they need to be gamma corrected if they are connected to the colour input of any node F.

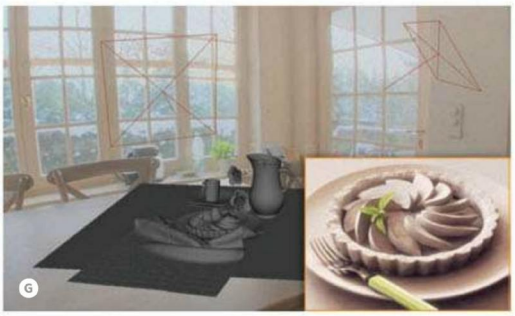
Problems and some solutions

In order to get a decent look for the cloth piece I decided to simulate it with nCloth by simply colliding the dish to the cloth. After that I took it to ZBrush to add high-frequency details, such as the vertical pattern and pitch fuzz pores. One thing to bear in mind about the peaches is that there is another layer of geometry around them. This represents the water coat layer on any wet surfaces. That layer also maintains the curvature at the contact areas to catch nice highlights. To create that layer, in ZBrush I combined all medium resolution peaches together and sculpted the layer in a way that it could represent a water shell around them.

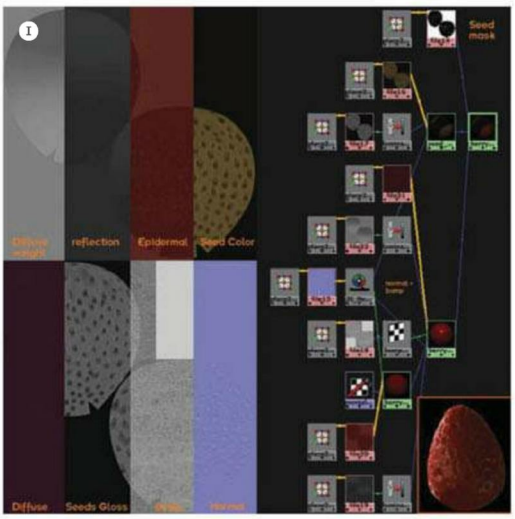
To handle objects that need some sort of surrounding, repeating pattern, I often use Radial Symmetry. Later when I'm satisfied with the look I add another layer and deform the object to suit the piece. This method usually saves a lot of headaches, not to mention time.

Add textures

Complete your lighting, move to materials and shading



07 Turn on the lights Going back to the lighting stage, the scene has an IBL node with a suitable HDRI image for the environment and a blurred version of it for final gather. I also based my camera angle upon the IBL node orientation in the scene. Aside from the IBL casting final gather I created two key Area Lights in places where they can be regarded as light sources in the HDRI image. Matching these key lights with the light sources in the image is essential, because with close-up positions where you have so much white reflection the viewer expects to see some diffuse contributions G.



09 Begin texturing and shading Almost all the models were textured in Photoshop and the rest in ZBrush. The maps I prepared for the objects were mainly colour, gloss, reflection, bump and normal maps. For the strawberry object I created a mask separating its seeds and later used it to separate the seed shader from the rest of the strawberry with the help of the mix8.Layer shader (**www.creativecrash.com/maya/downloads/shaders/c/mix8-layer-for-mentalray**). Therefore it consisted of two shaders, one for the flesh and one for the seeds. The mia_material shader for the strawberry flesh had an SSS shader plugged into its additional colour I.

D Final assembly of the models

E The scene lighting setup

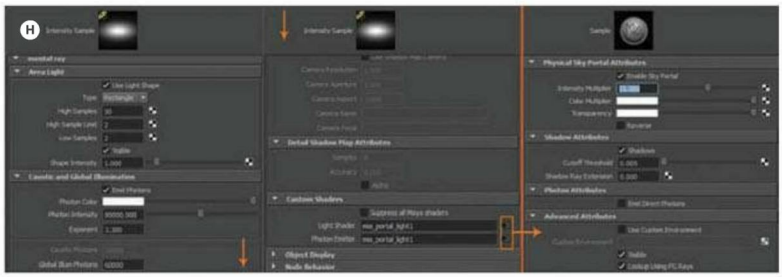
F It doesn't matter which lens shader is used. The crucial factor is the gamma values

G Two soft Area Lights plus an IBL. The key light is on the left

H Settings of the Area Light on the left side, including its plugged portal light on the right

I Textures and shaders used for the strawberry with a bit of help from mix8.Layer

J Cake sponge textures. Some of them were polypainted



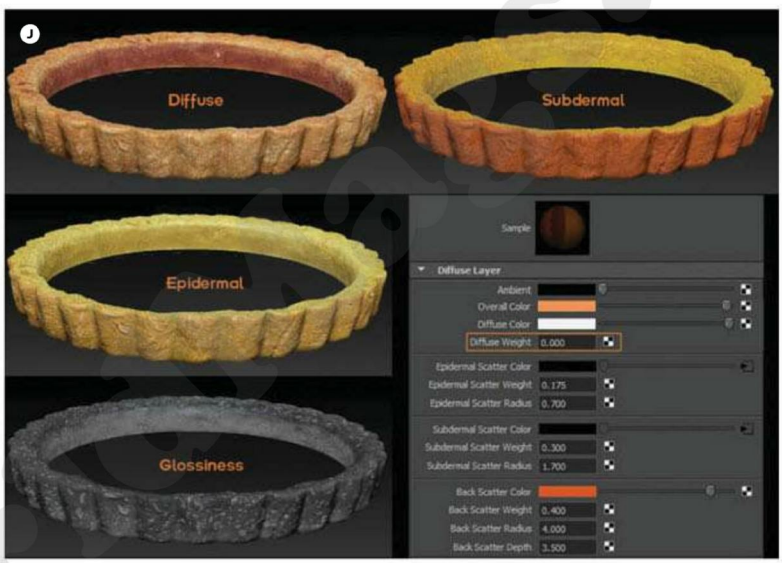
08 Edit environment effects Portal lights are connected to Area Lights to focus FG rays. If you don't check Use Custom Environment, the program will automatically sample the environment colour that the camera sees by default unless it's given a different environment look-up, so not checking it is preferred in this case. These lights also emit photons, as it's a close-up interior shot, to provide even more decent light bounces H.

Shader setup

Note that when you plug SSS shaders in to mia_materials, the diffuse weight is exactly the same as that of the SSS shader. To get best results, turn off any specularity feature on the actual SSS shader because that is supplied by mia_material. As I said earlier, be aware that any colour values must be gamma corrected. However, remove those nodes in the images to reduce the complexity of the networks you are viewing.

Whenever I deal with objects that have cracks, dips, pores, wrinkles or other imperfections, I switch my model to the highest level and create textures based on the mask and ambient occlusion. Both of these will come in handy with texture painting, clearly and easily defining shapes.

In order to achieve the pitch fuzz effect on a suitable object, such as the piece of cloth, I applied a high-frequency displacement map to simulate pores at render time. In this case I chose to use displacement maps because light can interact with them much better than with bump or normal maps. Also don't forget to amplify roughness in mia_material on particularly rough objects.



10 Cake sponge and peaches Many cake pieces had an SSS shader plugged into them to make them look more convincing. For instance, the cake sponge has epidermal and subdermal maps, dictating it to get more saturated and reddish the more light leaks inside. There are four different types of peach slices scattered around the center, each of them has its own textures to add some variations to the rendered image. Each peach slice is consisted of two parts: shell and flesh. Knowing that, I used mix8.Layer for them as well to separate the two parts. Both flesh and shell have their own SSS shader setup J.

Render setup

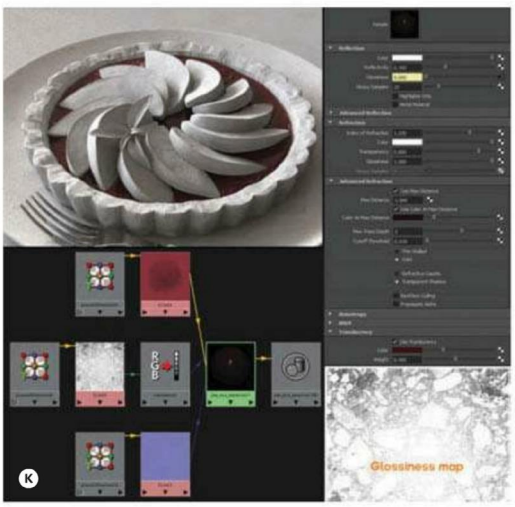
Finalise the look development and render

6 hours render time
Resolution: 1,232 x 1,400

11 Add jam shading Now it's time to explore the jam shading. Technically speaking jam is a refractive/translucent type of material, so it lets light through but only to a certain extent. To do this I activated Use Max Distance under Advanced Refractions and gave a darker red colour to gradually fall into the material. I also used translucency to make it seem more believable. In addition to jam shading, to obtain some variations in its dryness or wetness I created a glossiness map and added it to the shader K.

13 Avoid shortcuts In my experience you can achieve burnt highlights by either not following the LWF, with the help of lens shader (that doesn't grant you the freedom you have in post) or tweaking light and material attributes too much. As a result it's best to render out 32-bit images. We see those highlights in so many situations during our day, it's best to have them in our work as well. Simply play with the image levels and experiment M.

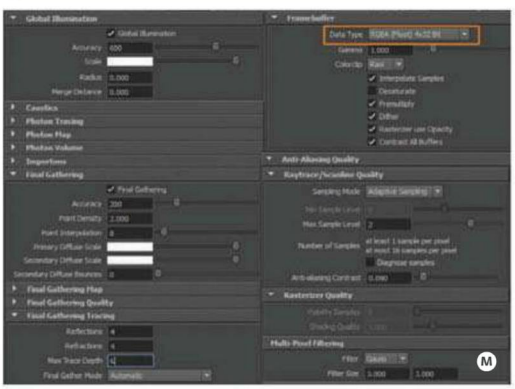
14 Begin post work Having the passes, I went into NUKE to do a simple composite because Photoshop is poor at handling 32-bit EXR files. After that I sent it to Photoshop to complete the final touches. Usually postproduction for me is where I can bring the image to life. I try to capture the desired mood as much as possible. This doesn't have any specific formula, just try anything that works for you, come back to it after a day, flip it and fix the flaws you find N.



K

Observation

It's necessary to observe objects in reality as much as you can and work from their surface properties for inspiration. Notice how dirt in different climates changes and where scratches occur on varying surfaces. This way you can extend your knowledge to create new stuff yet have it look convincing and real because it draws from genuine sources.

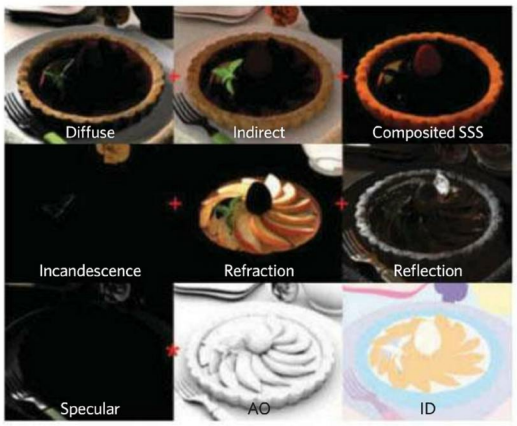


M

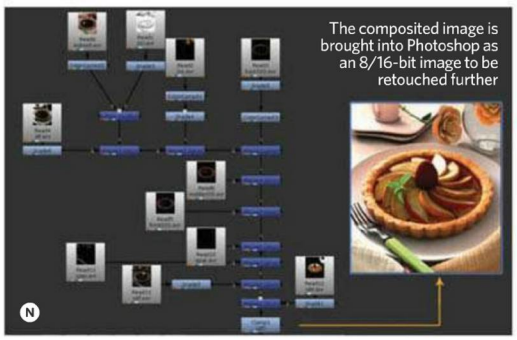
K Sometimes translucency is very sensitive to light changes. As it's a fake approach, often it requires experimentation

M Even after adjusting levels the 8-bit image still can't get close to the 32-bit. You can also see render settings here

12 Render pass options To have maximum control over the look of the final image I rendered it in passes in a single EXR file. Separate the SSS pass to front, middle and back to have maximum control over it. When you are trying to get a realistic 3D image, check the 32-bit Full Float output otherwise you will not be able to get nice burnt highlights in postproduction owing to the fact that hot spots in 8-bit or even 16-bit images can't be tweaked to bleed into another colour without crushing down the shadows L.



L Render passes. The composited SSS pass is the combination of front, middle and back SSS passes which were rendered out separately



N

Conclusion

It wasn't possible to cover everything in this short tutorial, so I basically tried to demonstrate the key stages of the process. I hope you have grabbed something from this tutorial to take forward in your work.

O

15 Go to postproduction The goal was to achieve a lush image with vivid colours. In post the main jobs were sharpening, colour correcting, adding DOF with the help of a zDepth pass, placing some chromatic abberations, including grains, refining a few shapes, painting out a few flaws and so on. To intensify the light brightness that's coming from left I screened a gradient to the whole image O.

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On the Disc

- 3D scene with basic environment setup and shaders
- Image files describing some of the shaders
- Sample shaders

Visualising architecture using Blender

House – stage two 2012

Starting from proper camera placement and setup, we'll create the building's surroundings, vegetation and the lighting environment

Lech Sokołowski runs his own studio

This is the second part of a tutorial series in which we'll learn how to handle a professional, architectural visualisation project using the free and open-source 3D application, Blender. In the previous issue we looked at the modelling techniques and skills required for professional 3D building preparation. This time we'll focus on various other aspects of architectural rendering. Starting from proper camera placement and setup, we'll create the building's surroundings, vegetation and the lighting environment. We'll also get into the hair particle system and study some of the great features of Blender's rendering engine, Cycles. The article will also cover some modelling tricks and other important aspects of creating professional, good-looking images.

As each render is in fact a 2D image created inside 3D software, it can be considered on the same basis as photography, drawing or even painting. A common aspect of all these art disciplines is the need to use proper image composition. There are dozens of renders on the internet that are perfect when it comes to technical issues, yet the overall effect is often average at best. Commercial architectural renderings aren't the kind of projects where we can apply many artistic values, yet a good composition will always give us many benefits. This will be our starting point for this article.

Software used in this piece

Blender 2.62

Camera setup
Shaders
Lighting

behind the scenes

Easy-to-follow guides take you from concept to the final render

Artist info

Lech Sokołowski

3DArtist online

Username: lechu

Personal portfolio site
www.no-triangle.com

Country Poland

Software used
Blender 2.62

Expertise I consider myself a 3D generalist. Although I specialise mostly in modelling, texturing and rendering, my real delight is compositing and postproduction. So far I've worked as a freelancer and 3D artist in Evermotion. Currently I run my own studio

Ⓐ When adjusting camera placement, always have the concept of the final image in your head. You can make some very simple drawings for helping yourself with that

Ⓑ Composition guidelines can be very helpful, but don't let them limit your creativity!

Camera setup

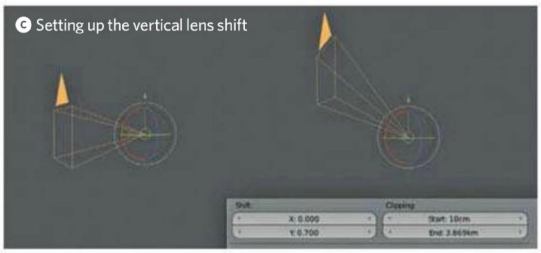
Good camera placement is essential

01 Camera placement Good camera placement and focusing on interesting aspects of the building (or any other object) is essential to achieve a good final effect. In part one of the tutorial, our closing image showed the front entrance of the house. However, after some considerations I've decided to choose a rear elevation. The main reason is that it will look much more interesting after adding the vegetation and other details. Secondly, it's easier to pick an interesting angle as we're not limited by any surrounding frontal elements that would need to be added for realistic results Ⓐ.

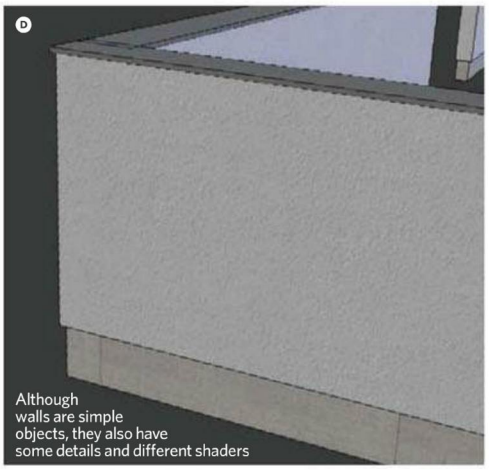
02 Camera properties The image aspect ratio used is 1.6:1, giving us a wider picture frame to cover the whole building and some surroundings. The resolution I've used for preview purposes was 1600x1000. Another very important factor is the camera Focal Length. I've used the standard value of 35 as it is very popular in traditional photography. I also recommend switching on the Compositing Guides to fine-tune the camera placement. Choices range from standard Center-based image subdivision to Golden or Harmonious Triangles Ⓑ.

Building surroundings

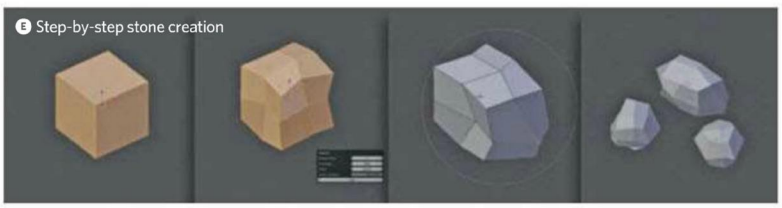
With camera placed, we'll now add surroundings and place the final details



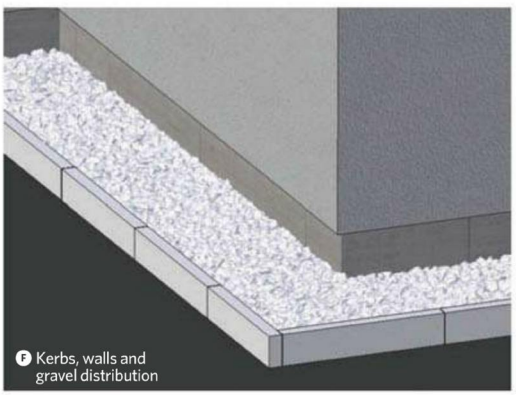
03 Lens shift Lens shifting is a technique allowing us to eliminate the natural distortion effects generated by standard and digital lenses. It's commonly used, especially in architectural photography. When using wide camera lenses (usually from 16 to 35mm), we have a wider viewing angle and can capture more information, but the final image will also be distorted. To eliminate this effect, the lens is being shifted out of its natural placement, neutralising the distortion. In our example we need to adjust the Shift Y factor and then rotate the camera in the vertical axis C.



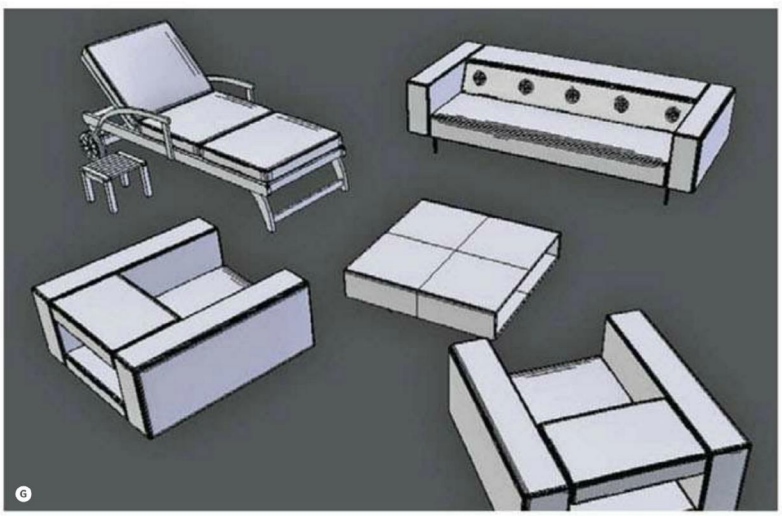
04 Surroundings and building details I start by creating the wall surrounding the plot. Depending on your client's preferences, you might be asked to create a metal fence or organic enclosure like bushes or hedges. This would require you spending more time working on the background, perhaps adding neighbouring buildings, vegetation etc. However, solid walls are quite commonly used by people and for us are the quickest way to create a good-looking background. We'll also create the vegetation behind the wall, which will diversify and detail the final image even more D.



05 Additional refinements The flowerpots from the previous tutorial don't look good enough so I'll extend them through the whole terrace. The building walls also need some detail. I've created thin kerbs and distributed them all around the building. Now we'll fill the gap with gravel stones. Create the plane object and extrude it along the building walls. Add a cube object, enter Edit Mode and subdivide it once, adding some random rotation to the newly created faces. The stones will be very small so the single subdivision should work well. Adjust the object manually by editing its Vertices. Create up to four different stones using this technique E.



06 Distributing objects Group the stones together and select the extruded plane from the previous step. Add a new Particle System and change its type from Emitter to Hair. Switch on the Advanced options and go to the Render tab. Click Group and select your stones from the list. You should now see all four of your objects being randomly distributed throughout the plane. Go to Emission settings and increase the amount number. It's also recommended to change the distribution type from Jittered to Random. Under the Physics tab you can also randomise the size of your objects F.



07 Pre-made models In real-life situations you're very often working within tight deadlines and many other stressful circumstances – that's why you need to be fast end efficient. While it's quite easy to prepare objects like windows, flowerpots and doors by yourself, creating good-quality furniture models for each scene is totally pointless. That's why it's essential to build up your own library of 3D models, ready to use at any time. Although most of the models available online are dedicated to commercial software, you can store them as .obj files, since Blender imports these without any problems. You may also create a Cycles shader library that might be used simultaneously G.

Problems and solutions

After putting the camera in the desired location, we'll now gradually add more and more details to our scene. It is really hard to estimate from the very beginning what will be the final object placement, shader setup or lighting parameters. In order to work efficiently, I always try to roughly build up my scene and later refine each detail after knowing its placement, dimensions or material. In the next few steps I'll focus on some techniques and issues that you may encounter during your own projects, but keep in mind that in real life you should build a workflow that will suit your own preferences. Be flexible, change the steps order, mix the techniques together or try to develop your own, basing this on the information you've already received. Ultimately, that's the only way to successfully learn new things and take your skills to a higher level.

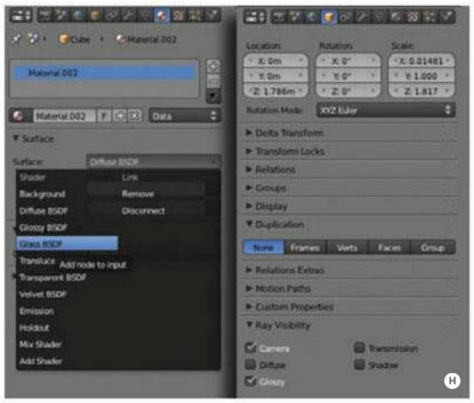
Interior design

Glass material for windows, plus curtain-making

Material system

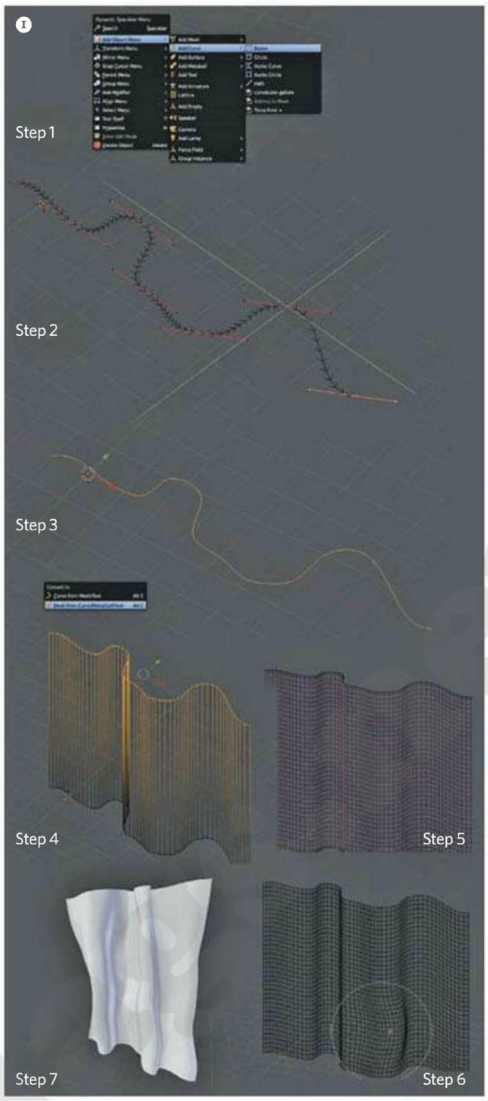
In the previous steps I've very roughly described the Cycles material system. This topic will be covered more deeply in the next part of this tutorial series, but some basic understanding of the shading system is required for the next steps of this article.

Cycles uses a node-based system for creating the materials and currently it doesn't offer any pre-made setups or shaders – it's up to us to build them from scratch. This approach has both advantages and disadvantages. First of all, you have total control over the shader. Most 3D applications have material systems supporting pre-defined shader types such as Diffuse, Glossy or Translucent. Each of these has its own specific values and parameters. In Cycles, every material you create can be freely defined and changed using the node editor. For instance, when we choose the Glass type of material, the node editor gives us the freedom to delete the Glass shader node and replace it with Transparent or Emit shader nodes. To create a physically accurate glossy material, we need to mix Diffuse and Glossy shaders, using a Fresnel node as the input for the mixing value. It may seem complicated, but once you grasp how this system works, you'll love it. One drawback is the lack of pre-made, useful materials that could be quickly added to the scene. This can be solved by creating your own library of the most used shaders and storing them in one Blender file.



08 Basic shaders In order to see the furniture we've just placed, we need to create a glass material. Although the Cycles shading system gives us a glass-type shader on the go, we still need to apply some adjustments. Firstly, your glass object must have a thickness, just like in the real world. Secondly, we need to tweak its Ray Visibility options. These settings determine which aspects of the material will take part in the rendering process. For instance, we can switch off the object's visibility, but still allow it to be visible in the reflective surfaces. For glass objects, especially windows, we need to turn off the Shadow, Transmit and Diffuse properties H.

09 Adding curtains The building's interior looks a bit too empty so I've decided to add some curtains. Create a Bézier Curve object and enter Edit Mode. Select an end point and by pressing the E key, extrude the curve, adjusting its shape. Convert it to mesh geometry by returning to Object Mode and pressing Alt+C. Choose 'Mesh from Curve' and enter Edit Mode once more. Extrude the path towards the ceiling, add horizontal subdivisions and press the P key to switch on Proportional Editing. By selecting random vertices, adjust the curtains and diversify their shape I.

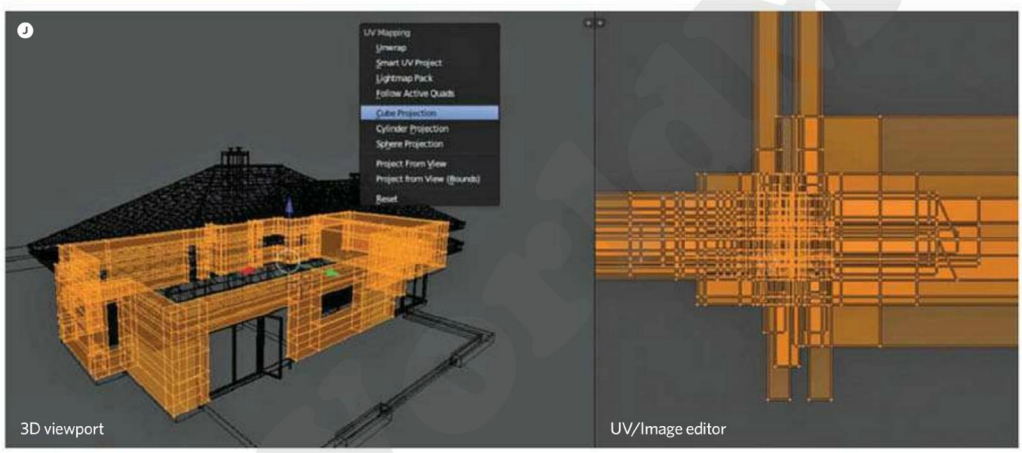


G Some of the models that I've been using in this tutorial scene

H Step-by-step process of creating a glass object and material

I Creating curtains in step-by-step fashion

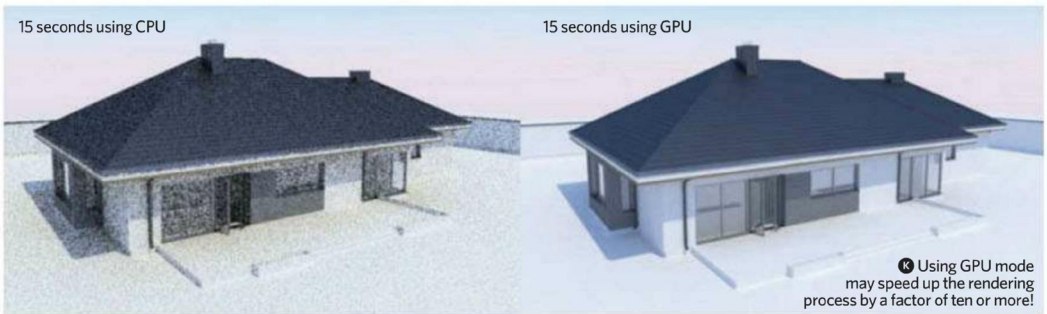
J The same method was used to map and texture the surrounding walls, flowerpots and terrace



10 Quick UV mapping To speed up the texturing process we'll use the Cube Projection technique to unwrap the house walls. Cube projection works quite well with architectural models, but always check if there are no visible seams in areas exposed to camera. If this issue occurs, select all of the faces directed towards the camera and use either the normal 'Unwrap' or 'Project from View' option. Remember that you don't need (and except for game models, barely ever should) to unwrap all your geometry at one command. Instead, select the faces you want to texture and use the unwrapping mode that works the best J.

Environment

Illuminate the scene using sun and environmental lights

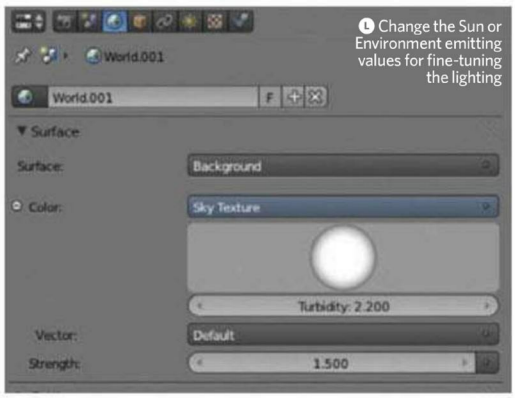


K Using GPU mode may speed up the rendering process by a factor of ten or more!

11 Lighting and preview rendering Before we create a lighting setup, let's learn how to preview our scene and render it in real-time. Next to the Mode button in the bottom tab of 3D Viewport we have a Display Mode button. Choose the 'Rendered' type of display and after a few seconds you should see your scene with an ambient occlusion type of lighting being rendered in real time. If the 'Rendered' type of display is not available, check if you've chosen Cycles from the Rendering Engine tab located in the Info panel. You can switch between CPU and GPU rendering modes in User Preferences>System options K.

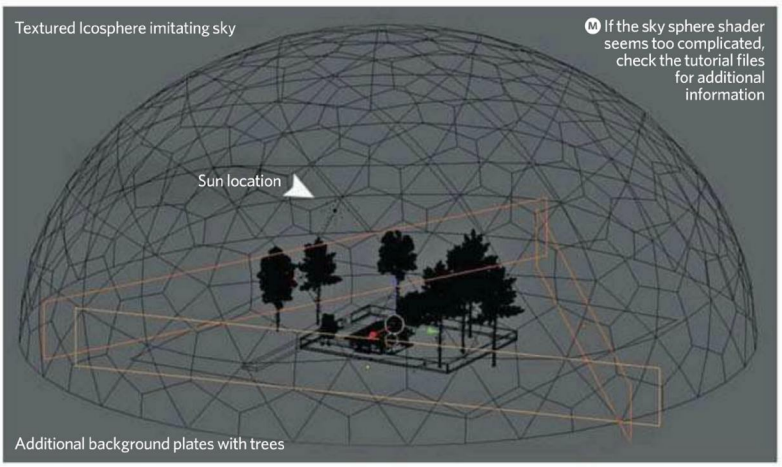
Shaders and lighting

It can often happen that a specific shader which worked perfectly in one scene doesn't seem to look good when we try to reuse it in another project. This issue is common to all 3D applications and in fact isn't even an error or software failure. Just as in real life, where we perceive colours, materials and surfaces depending on the environment in which they're located, the same effect applies to the digital world.



L Change the Sun or Environment emitting values for fine-tuning the lighting

12 Sun and background light Open the World setup panel and change the Surface colour type from RGB to Sky Texture. If you switch on the Rendered mode in Viewport, you should see a nice-looking physical sky appearing. By clicking and dragging the sphere in World panel, you're able to define the physical sun placement or change the time of day, from midday to evening for instance. Still, there are no shadows appearing in the scene. Press the space bar and from the Add menu, choose Sun lamp. Access its settings and change the shadow size from 1 to 0.01. Now you should have a fully working sun and sky system L.



M If the sky sphere shader seems too complicated, check the tutorial files for additional information

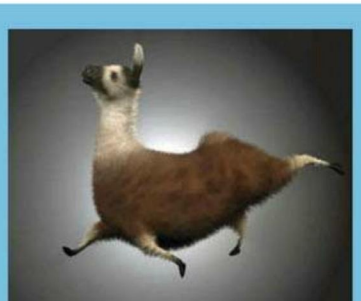
13 Environmental setup The default sky system looks nice, but doesn't have any settings allowing its colour correction or image placement. We could replace the sky in a 2D application, but this can be also done inside Blender. Create an Icosphere and delete its bottom part, subdividing the object to half. Generate the UV map choosing the Cylinder type of Unwrap and load the panoramic sky texture you find most suitable. Refine the UV mapping so it covers the entire image and return to Object Mode. Scale the sphere up and rotate it the way that gives the best sky look. Now create the node material setup based on the attached image M.

Artist Showcase

Lech Sokołowski

I'm an architect by education and 3D artist by passion. Since my youth I was interested in various forms of expression, especially drawing. My adventure with 3D graphics started during my studies and I've really quickly fallen into it. Currently I run my own 3D graphics studio and live a happy life in a quiet, mellow region of Eastern Poland

***Change* ZBrush (2009)**
The project that I started years ago as a simple ZBrush exercise later turned out to become very personal, describing some situations I've been going through in my life in the past

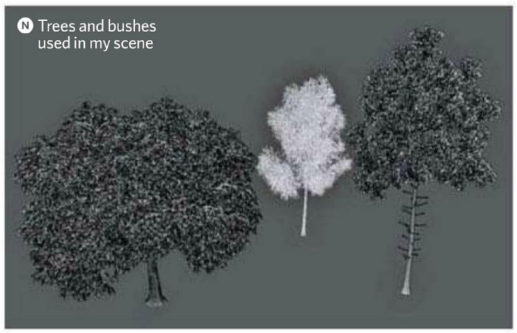


***Lama* Blender (2009)**
Lamas are my favourite animals... This image is a result of rigging and fur rendering exercises I did in Blender years ago

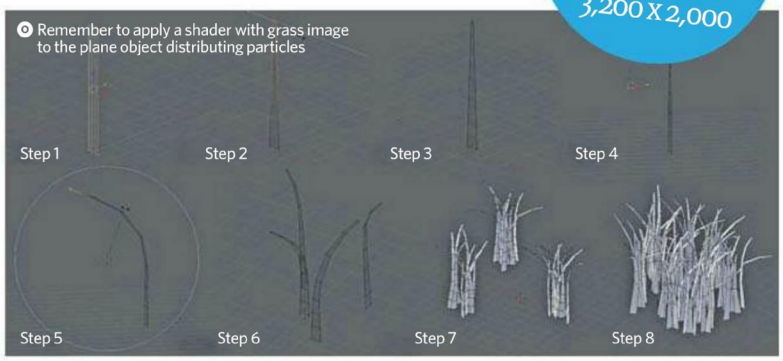
Vegetation

With other details finished, we will focus on vegetation

30 minutes render time
Resolution: 3,200 x 2,000



N Trees and bushes used in my scene



O Remember to apply a shader with grass image to the plane object distributing particles

14 Vegetation models database As with the furniture, you need to have a good, pre-made model library for vegetation. Compared to more technical objects like furniture, trees and other forms of vegetation are much more challenging to create, even when you have time. There are a plenty of very good-quality models available on the internet; but if don't want to buy them, you can use open source software like ngPlant, for instance, to quickly generate your own, nice-quality vegetation models N.

15 Grass distribution To distribute grass in the scene we'd use the same technique as with the gravel in step 6. Grass modelling is fairly simple: create one strand and a UV map (simple Unwrapping should work fine). Bend it using proportional editing and 3D cursor. Create up to five different strands and mix them together into up to four small, varying clumps – you can also change the scale of each strand. Take these strand groups and create bigger clumps – these you can separate to different objects and join them into a group. Use the Hair Particle system to distribute the grass O.

16 High-poly geometry Fine-looking trees are usually very heavy 3D objects, comprising up to hundreds of thousands or even millions of polygons, so we have to use them very wisely. In Blender we can duplicate or copy objects in two ways. The standard Shift+D method results in creating two totally independent objects. During the rendering process each of them is being calculated separately, requiring more RAM and therefore slowing down the rendering. However, we can copy objects in a much less resource-consuming way. For this we should use the Alt+D key combination to create an object instance. Instanced objects will be calculated only once and can be distributed through the scene countless times P.

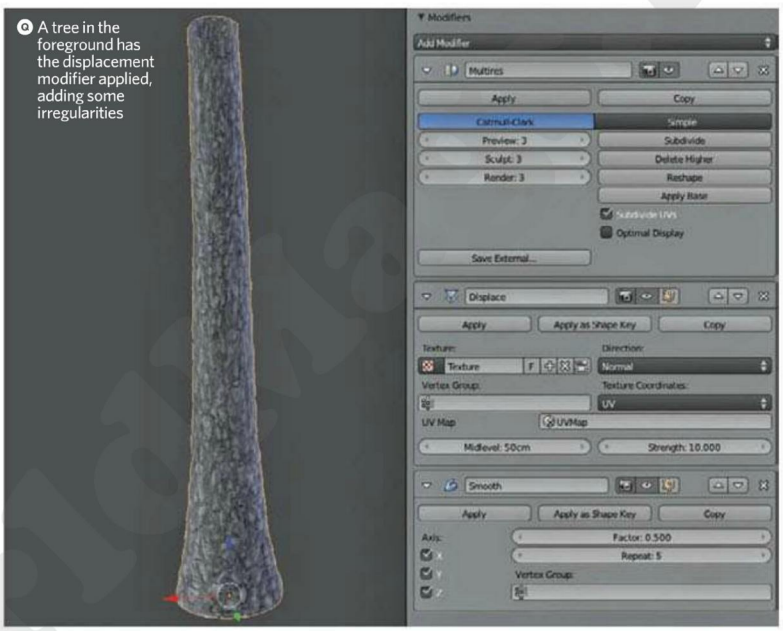
Only two 3D models were used to create the foreground vegetation. Each model is distributed as an instance

P Limit yourself to just four tree objects and use different scale and rotation parameters for diversifying their look

Final thoughts

We've reached to the end of the second part. Hopefully you've managed to learn some new skills that will turn out to be useful on an everyday basis. For more in-depth information, especially regarding the Cycles shading system, please check the materials on this issue's CD. Next month we'll be covering this topic even more deeply, together with rendering and postproduction techniques.

Breathe **Blender, Octane Render (2011)**
I'm interested in macro photography and this inspired me to create some imaginary flowers, place them in a moodily lit environment and render using GPU technology



O A tree in the foreground has the displacement modifier applied, adding some irregularities

17 Tree placement Gaining some knowledge about proper scene management, let's now add the vegetation to our image. We don't have to fill everything with trees as it is in real life – having the camera already set up, place the vegetation only where it's necessary. I've made an exception to this, putting some trees out of view in order to achieve nice, deep shadows being cast on the lawn and the back of the house. Using all the techniques described in this and the previous article, I've created the foreground to add more depth and harmony to the final composition Q.

I made this...

Incredible 3D artists take us behind their artwork

Artist info

Sofian Moumene

3DArtistonline

Website http://moumenesofian.cgsociety.org

Country Romania

Software used 3ds Max, V-Ray, Photoshop

Ice Cave 2012

The idea behind this scene started out as a material test in V-Ray, and as I was testing the material I became aware that I needed a more complex scene to properly test the material, so I let my imagination take the lead. I knew for sure that I wanted a sci-fi scene, because I like everything about [the genre].

I started painting the background in Photoshop then modelled the ice pillars and all the other major elements. The render time was pretty high because of the complex ice material and the displacement – it took about 28 hours, then I started the postproduction in Photoshop.

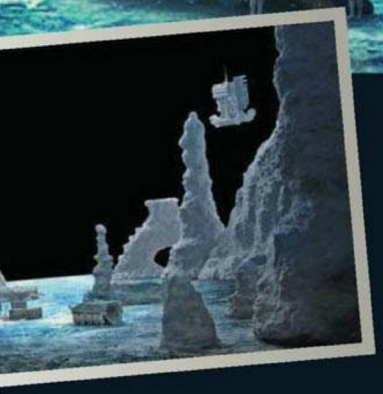
"I took [the postproduction stage] as a challenge, because this was the first real [time I'd attempted it]. The render was finished a while ago, but I wasn't satisfied with the result [so I made adjustments] to make it look better, and enhance the mood"

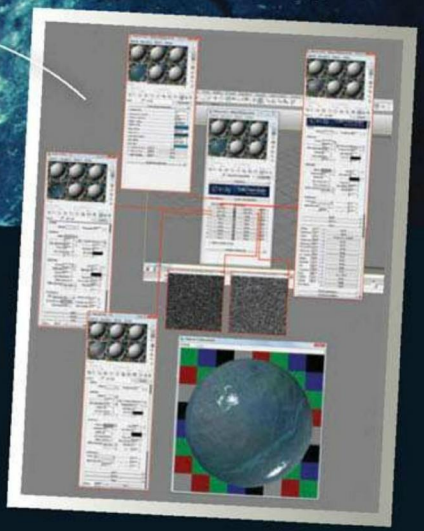
“With the lighting, although very simple, I wanted a mysterious effect, with the light source somewhere from the top of the cave, outside the frame of the image. As you get farther from the point of interest it fades out into darkness”

Software used in this piece

3ds Max | V-Ray | Photoshop

“My passion for science fiction helped me build this image and create the feeling of an icy alien planet”





“The ice material is the main reason I began working on this image – I didn't necessarily want to create a photorealistic ice material, but an artistic one. I tried to blend in 3ds Max different types of materials, like VRayFastSSS2 with different V-Ray materials, each with different maps until I was satisfied”

Model a luxury car

Jaguar xkx concept 2011

"The objective was to design a concept car inspired by the Jaguar E-Type, and give a rebirth to the original brand"

Hussain Almossawi and Marin Myftiu A graphic designer and architect respectively, both 3D and car enthusiasts

Software used in this piece

3ds Max | V-Ray | Photoshop

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Hussain Almossawi
Marin Myftiu

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Username: mossawi09

Personal portfolio site
www.skyrill.com
www.marinmyftiu.com

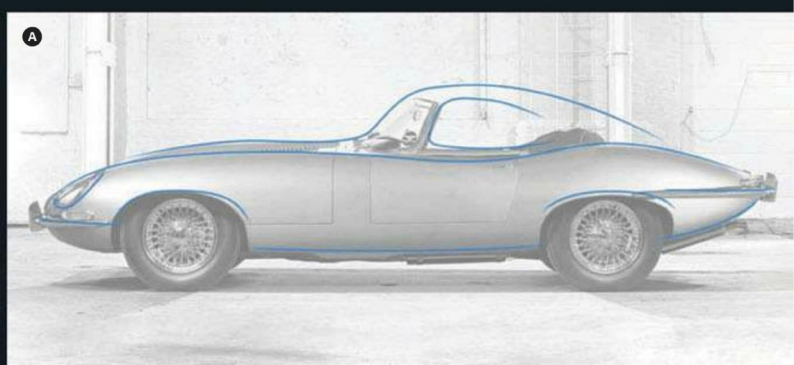
Country Bahrain/Albania

Software used
3ds Max, V-Ray, Photoshop

Expertise Hussain is a graphic designer and currently completing his masters degree in Industrial Design at the University of Alberta. Marin is an architect in his final year at the Polytechnic University of Tirana. They both have their different interests but what brings them together in this project is the love of 3D and cars. Together they have been able to come up with a great collaboration for you to follow.

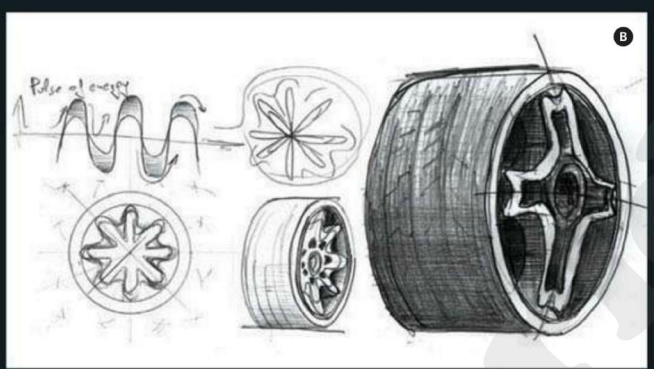
Presentation is always a key factor when you want to sell an idea, sometimes a great idea can be presented poorly while a bad one can seem greater than it is. This tutorial will guide you through the preparation of modelling a car, and then how to present it in the best way. The aim is to have a great design, with smooth presentation, to pay off for all the hard work on your car, or any other model.

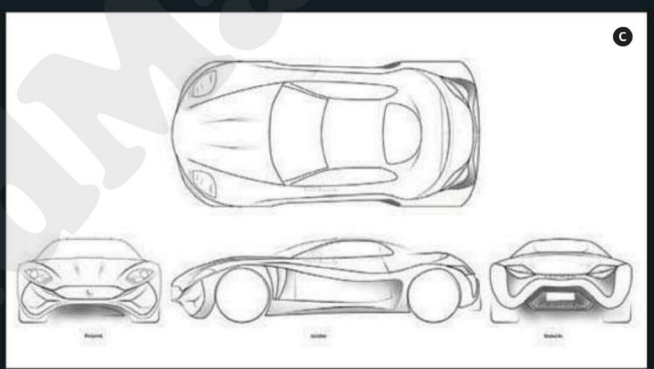
As we progressed through the various stages of the design, we found the unavoidable need to transform our concept-creating, modelling and presentational skills to a level that would reveal the full boldness and innovation of the original idea. As we were developing some finely detailed geometry, a more direct vertex editing was required, as well as recursive checks and test renders, just to see how every aspect of the model behaved in different lighting conditions.



01 Inspiration and brand study As part of the analysis we wanted to get different views of the lines of the E-Type Jaguar and then see where those lines could lead. In Photoshop, a side view of the car was placed on the bottom layer and on a second layer several path strokes followed A.

Concept
Modelling
Lighting



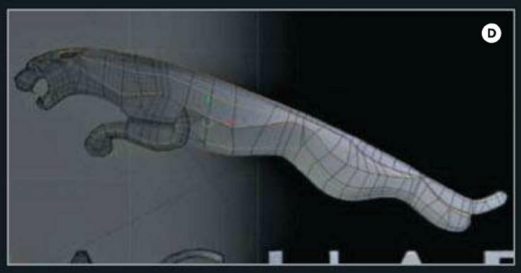


02 Design the rims Several sketches were done for the rims, but directly playing with simple functions such as scaling and moving points on circles began to give the most satisfactory results, with an X-shaped inner part. This emphasises both a sense of raw power and a gentle pulse of energy (B).

03 Prepare the blueprints The final sketches, together with the path analysis were then combined into sketches of the main orthogonal views and subsequently cleaned up to blueprints in Photoshop. Those blueprints were subsequently used in 3ds Max to aid with the modelling stage (C).

Set up the model

Bring out the true beauty your car deserves



04 Model the jumping jaguar A straightforward approach was followed in modelling the leaping jaguar logo. Vertices were extruded around the silhouette and along all the contours that were relevant from the backdrop image. Every single line was raised or lowered accordingly. In the end the faces were formed, followed by a final adjustment D.

05 Find the best camera angle Finding the best angle to render your car in can be a tough challenge sometimes, you could be doing your creation an injustice by rendering it at a bad angle. Place three cameras at different heights, and animate them to revolve around the car, rendering at very low quality, which will give you a good idea of the best angle(s) to work with E.

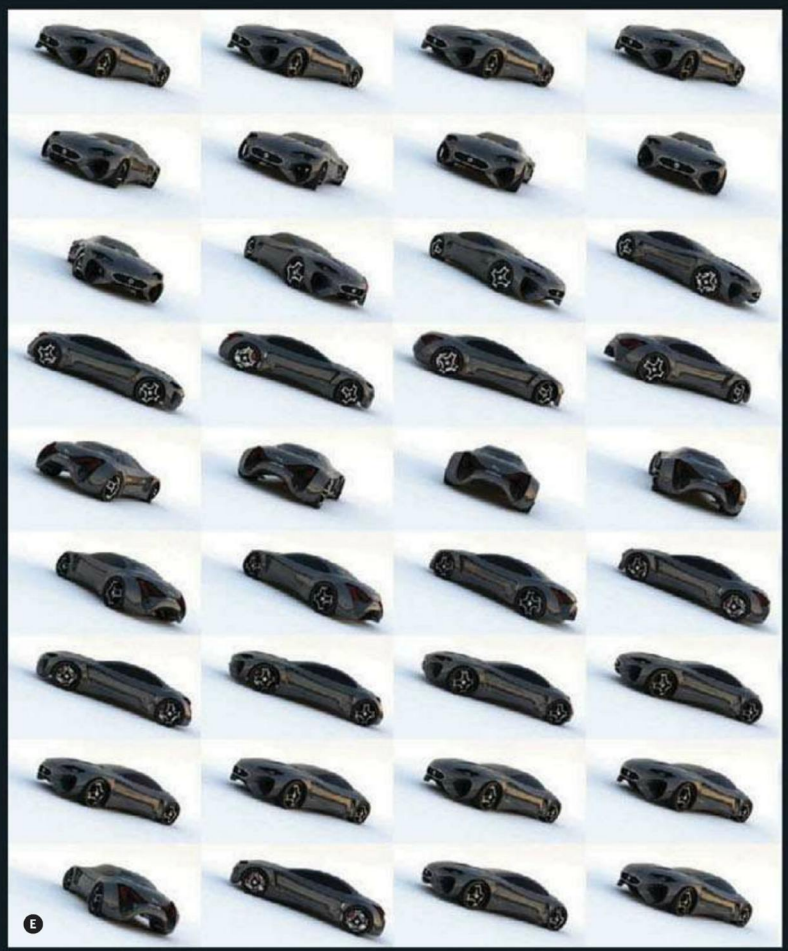
Work with complex geometry

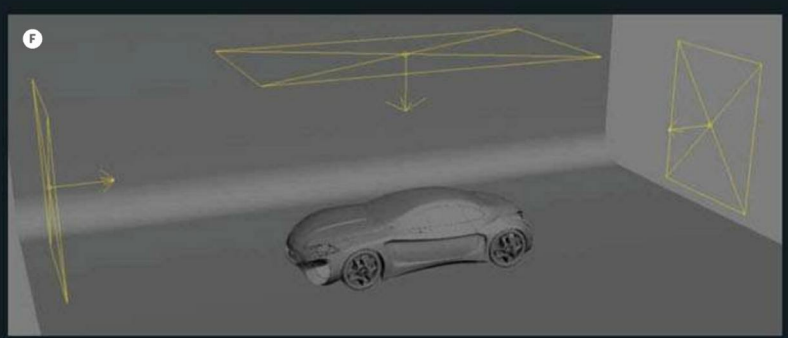
There were several challenging aspects we faced during different stages, but none more so than dealing with the undefined geometry. During several steps of the development we found that using standard editing tools just wouldn't yield the desired geometry. When modelling an existing vehicle you can rely on precise blueprints and countless pictures to help you decide the best techniques, but when building from scratch this is mostly not possible. To tackle this we manipulated geometry vertex by vertex and face by face.

> Rendering in high quality can always be tempting, but at a really low quality gives you a good sense of how things are looking

06 Set up the lighting Lighting could get quite tricky and complicated. Create a simple backdrop to your car with a smoothed corner. Place V-Ray lights above the car, one in front and one in the back, to make sure it is completely covered. Experiment with having more than one light plane around the car F.

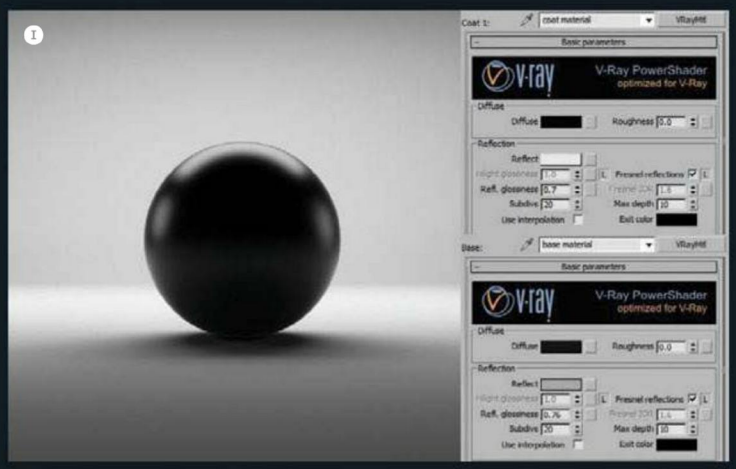
07 Bring out some details Since this car is going to be rendered in a dark studio scene to bring out its curves and lines, some important details can be missed out. You can use as many more lights as you wish, pointing to certain details, but excluding all the other objects to prevent them from lighting up G.





08 Render in V-Ray Rendering in high quality can always be tempting, but using a really low quality to give you a good sense of how things are looking and turning out is a big time-saver. Setting your Image Sampler to Fixed with low values, and lowering all the sample sizes on your Materials, Lights and Render settings speeds things up when you come to testing H.

09 Add materials The main matte material for the car was using a V-Ray Blend Material. The main idea is using the base material and coat material, with similar settings, but having slight differences in the reflective settings, to enable the light to spread better on the matte finish I.



10 Work with different passes Working with passes is essential to postproduction as it gives you much more freedom to make quick changes and adjustments. Render Elements is one way, but we were after a unique look where we could have some sharp reflections mix with our matte finish. Rendering the car with both materials and overlaying them in Photoshop worked well J.

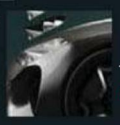
Artist Showcase

Hussain Almossawi

I am 23 years old with lots of passion and love for 3D. I always try to keep an eye open for things being done by others, that's what inspires me and makes me want to move on and explore all kinds of different things in the 3D world. I run Skyrill.com alongside my brother.

Color Revolution **3ds Max, V-Ray, Photoshop (2011)**
In collaboration with Anthony Giacomino. We came up with words to base the typography on and a scene that would fit the word. The type has more of a frozen look and it's placed in an icy, cold environment. The idea also depicts new and foreign colours being introduced to the scene. This was created for Intrinsic Nature's latest online exhibition, 'Experiment 11'.

Love Potion **3ds Max, Photoshop (2009)**
A poster that visualises the metaphor of love being medication for the ailing heart. This poster was selected as a Daily Deviation on deviantART on 28 March 2009. "A lifetime without love is of no account, love is the water of life, drink it down with heart and soul!" – Rumi.

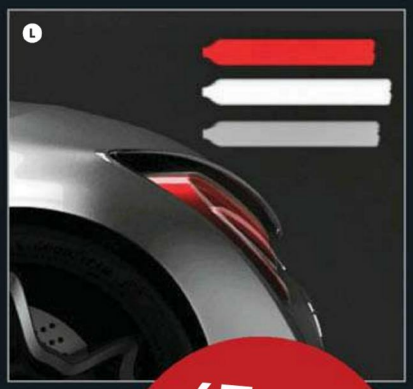


Add atmosphere

Time to give your car that finished shine

11 Perfect the headlights These lights are sometimes the trickiest to create. Often they just don't get the right kind of exaggerated reflections to make them stand out in a studio environment. We used about five passes over the original render, along with the reflection on the cover by adding a gradient to make it stand out more (K).

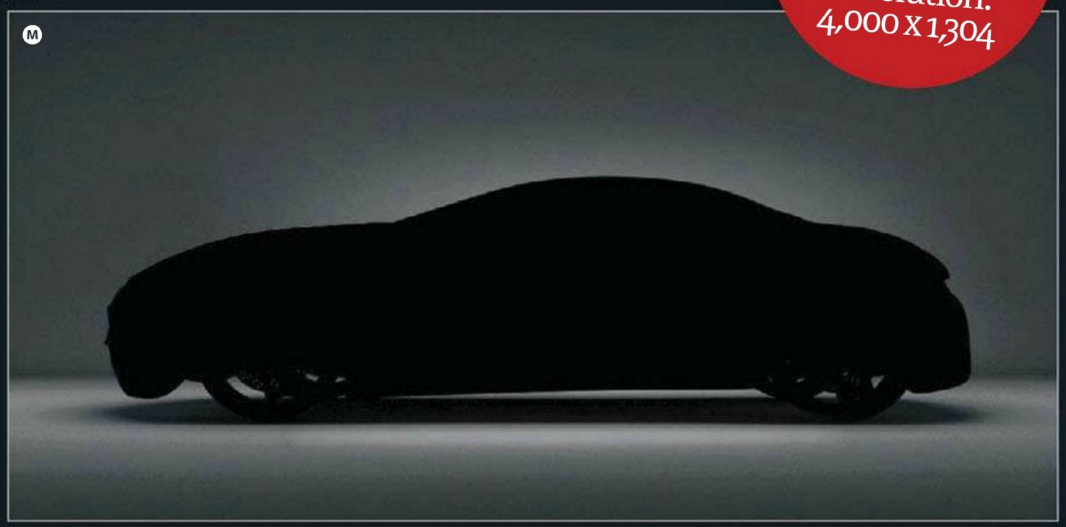
12 Polish the surfaces The break lights in the back of the car were repainted in Photoshop with a much stronger red. The reflections on the side windows where smoothed outs, and some of the cuts where cleaned up if they had any noise. Exaggerating some parts and making everything crisp is essential for presenting your work (L).



> "The mood of the scene is one of the most important elements; it needs to flow very well with the lighting on the car to add a greater sense of realism"

45 minutes render time
Resolution: 4,000 x 1,304

13 Unify the overall scene
The mood of scene is one of the most important elements; it needs to flow very well with the lighting on the car to add a greater sense of realism. Using different radial gradients in Photoshop on the floor and backdrop, at different opacities, created a nice sense of harmony that matched the lighting on the car very well. A slight tint of the backdrop colour can also be added to the car to match the new scene colours (M).



Artist Showcase

Marin Myftiu

I am a freelance designer and architect with experience in architectural, interior and product design. Also competent in 3D modelling and rendering, my experiences include graphics design, programming and journalism.

Recently I have become more and more interested in car design, studying current trends and trying to anticipate future ones in personal, commissioned and competitive projects.

SKIN **Blender, Photoshop (2011)**
Inheriting the most distinctive morphology of the Renault 4, *SKIN* tries to go one step further than other retro designs by preserving the main silhouettes of the car. The piece is interpreted using current Renault design trends.

VW PASSAT S-Revision 2 **Blender, Photoshop (2011)**
Revision 2 of the Passat S model tries to carve a distinctive visual character for the Volkswagen Passat name. I am taking the previous project towards a more refined geometry, while also taking into account actual hexagonal trends in vehicle design.

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3DArtist

Masterclass

Digital-Tutors helps artists across the globe make movies and games with the world's largest online CG training library

By breaking our scene into Render Elements, we maintain creative control after rendering

On the Disc

Project files
1.5 hours of video tuition

Utilising render elements in V-Ray for Maya

> Using a compositing application, you can add a number of effects... that can be made instantly without the need to re-render

As rendering artists, our job is quite simply to 'make things look good'. However, the desire to get the 'perfect' render directly from your 3D rendering software can lead to countless hours spent tweaking and re-rendering your scene. One issue which is often neglected by rendering artists is the need to fine-tune your renders using some type of 2D compositing application. If you can get the lighting and shading in your 3D scene to about 80 per cent satisfaction, a tremendous amount of time can be saved by rendering your scene and adding that last 20 per cent of polish using a 2D compositing application.

Using a compositing application, you can add a number of effects – instant depth of field, instant motion blur, shadow and highlight adjustments, colour correction, film grain and countless other alterations that can be made instantly without the need to re-render from your 3D software. When adopting this workflow, it is in your best interest to give yourself the highest possible level of control within the compositing software.

To this end, V-Ray has the ability to separate components of your final render, such as direct lighting information, global illumination, shadows, highlights, reflections, depth and much more, into individual images that can then be reassembled in your compositing software. V-Ray refers to these individual components as Render Elements.

After compositing your Render Elements back together, you now have complete control over almost every aspect of your final render. So if your highlights are too strong, you can now simply dial down the specular element layer in your compositing software. If you want to slightly change the colour of your shadows, you can apply a hue adjustment that only affects the shadow layer of your composite. Once you adopt this workflow, you will be able to make dramatic alterations to your final image without ever having to re-render your scene from V-Ray.

The primary benefit of Render Elements is obvious: you gain a tremendous amount of control over the final image, and radical alterations can be made in nearly real-time

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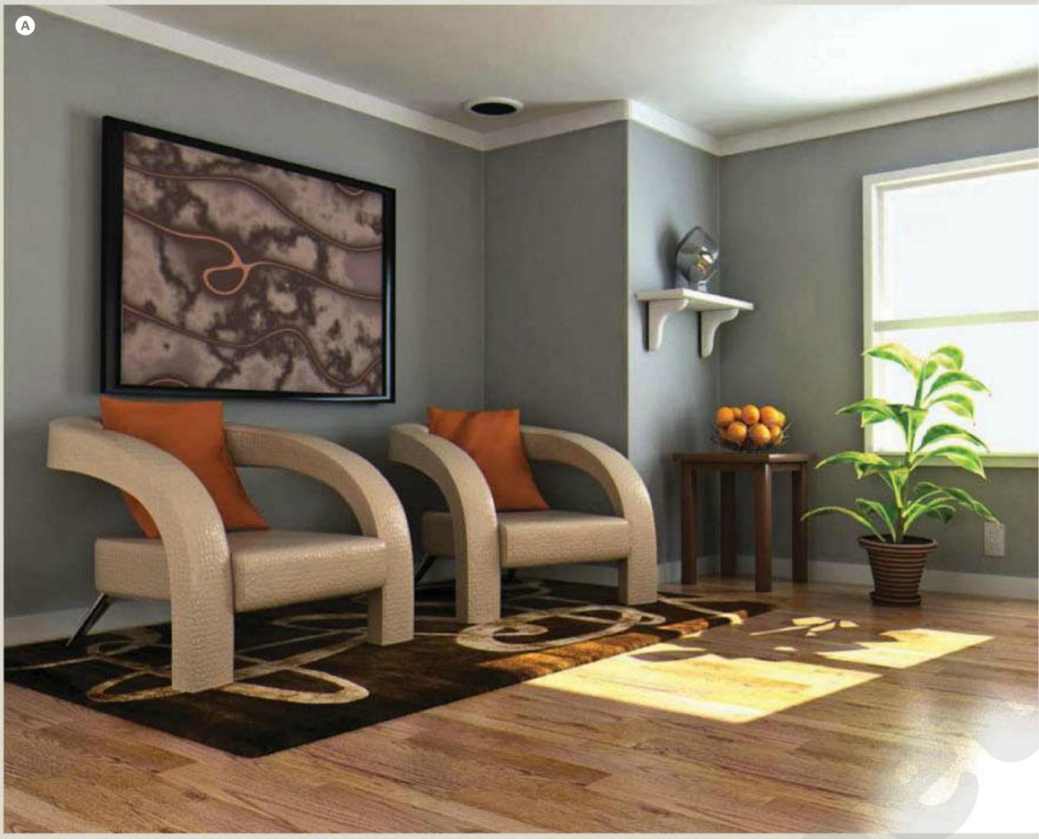
during the compositing phase. A secondary benefit is that Render Elements require almost no additional render time and, in some instances, using Render Elements can dramatically improve the speed of your renders.

For example, a scene that includes effects such as camera depth of field and motion blur will render very slowly using traditional methods. But by using V-Ray, you can write z-depth and velocity information into specialised Render Elements, which are able to be rendered very quickly. These Render Elements can then be used in your compositing software to create instantaneous depth-of-field and motion blur results, and with complete interactive control.

V-Ray also supplies several Render Elements that allow for even greater levels of control during the compositing phase. Material ID passes can be used by the compositing software to generate masks around specific objects in your scene. This is especially useful for applying colour corrections and other post effects that only need to affect certain objects within your composition.

Certain effects, such as a car paint shader, may be achieved by blending several different materials to get a very specialised result. The Material Select element will allow you to write blended materials into their own separate Render Elements. These various elements can then be reassembled in your compositing software, giving you interactive control over the individual materials without the need to re-render from V-Ray.

The Extra Texture element allows all objects in your scene to be rendered with a particular texture that may not otherwise be a part of any shading network. This can be useful for creating special abstract overlays for objects in your compositing software. For example, you could connect a V-Ray dirt texture into the Extra Texture element. Now at render time, a new Render Element will be created that renders the V-Ray dirt texture to all objects in the scene. This Render Element could then be used as an ambient occlusion shadow pass in your compositing software.



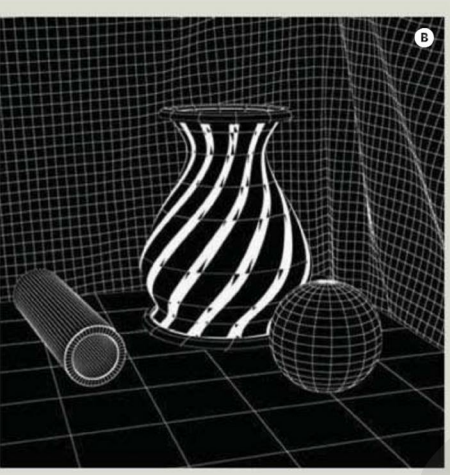
> These Render Elements can be used in your compositing software to create instant DOF and motion blur results

The 3D normal information from your scene can be stored in the V-Ray Normal element. This normal information can be used by your compositing software to perform interactive 2D relighting of your scene. Keep in mind that 2D relighting typically produces very basic lighting results. So while this is not a good solution for completely relighting your scene, it can be used to make simple, subtle enhancements to your existing lighting results without having to re-render your scene from V-Ray.

Light Select elements can be used to store illumination data from specific light sources. By separating your light sources into various Render Elements, you now have the ability to control the intensity of certain lights directly from your compositing application.

Initially, rendering artists may be hesitant to undertake the additional steps of setting up Render Elements and reassembling the passes in another application. However, the speed at which you can polish up your renders, combined with the extraordinary level of control that Render Elements can provide, usually translates into huge time savings overall.

Let's take a look at how we can begin using Render Elements in V-Ray for Maya...

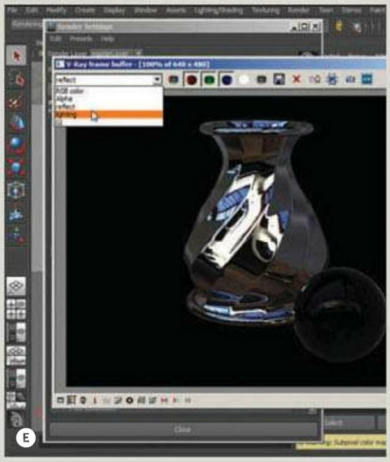


A Enhance your interiors with this step-by-step guide

B A wireframe view of this masterclass's scene setup

C The scene's occlusion pass

D The Render Elements list can be found in the Maya Render Settings window



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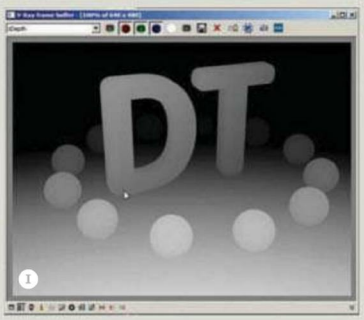

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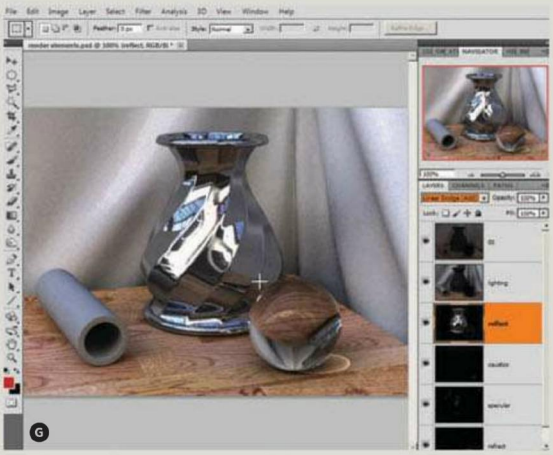

G

E Any Render Elements in your scene can be viewed through the V-Ray Frame Buffer

F The V-Ray Frame Buffer can be used to save all of your Render Elements

G Many Render Elements can be composited using a simple 'screen' or 'add' blend mode

H Material ID passes help compositors generate mattes for certain objects in the scene

I The Z-depth element is commonly used during compositing to add depth-of-field effects

Understanding Render Elements in V-Ray

01 Adding and removing Render Elements

Start by going to the Maya Render Settings and ensure that you are using V-Ray as your rendering engine. In this same window you should see a tab labelled 'Render Elements', which lists all of the available V-Ray Render Elements. By default, the column on the right is empty, meaning that our renders are not utilising any of the available Render Elements. Double-clicking on a Render Element from the left column will add it to the right column, allowing the element to be calculated at render time D.

02 Viewing your Render Elements

Once you've added the desired Render Elements, you'll need to render the scene in order for them to be calculated. However, you cannot view your individual Render Elements through the default Maya Render View, so we will instead rely on the V-Ray Frame Buffer window. To enable this feature, go to Render Settings>VRay Common tab and enable the 'Use V-Ray VFB' checkbox. Now the next time you render, the V-Ray Frame Buffer window will appear and you can preview your individual Render Elements from the pull-down menu in the corner of this window E.

03 Rendering your elements

Rendering the various elements of your scene requires a high degree of attentiveness. You need to think about the compositing requirements of your particular scene, and which Render Elements will be needed to help you reach the final look you desire. To save your Render Elements from Maya, render your image into the V-Ray Frame Buffer and within this window click on the 'Save' icon. This will enable you to save all of your Render Elements to disk in any format you choose. You can also simply perform a batch render for animated Maya scenes that require Render Elements F.

04 Simple compositing of Render Elements

Most Render Elements are designed to be reassembled very easily during the compositing process. In your compositing application, basic element layers such as lighting, GI, reflection and refraction can be composited together by setting each layer to a 'screen' or 'add' blend mode. If working with a layer-based compositing application like Photoshop or After Effects, the basic Render Element layers can be stacked in any order. Changing the layer order will have no impact on the composited result G.

05 Rendering Material IDs in V-Ray

Material ID passes allow compositing artists to create clean masks and alter very specific parts of the render, based on object materials. You can start by adding a 'Material ID' Render Element to your scene. Now select a material in your scene and go to the material's Shading Group. In the Attribute Editor of the material Shading Group, go to Attributes>VRay>Material ID. In the material Shading Group, you can now choose a colour that will be written to the Material ID element. Choose a unique ID colour for all materials in your scene H.

06 Rendering Z-depth in V-Ray

The Z-depth Render Element can be used in your compositing software to quickly add depth-of-field or fog effects to your render. Start by adding a Z-depth Render Element

Render Elements & Maya Render Layers

If you are rendering a Maya scene that contains multiple Render Layers, you may not wish to use all of your V-Ray Render Elements for every layer. On the other hand, you may have a certain Render Layer in your scene that only needs to have one particular Render Element applied during rendering. Maya's built-in Layer Overrides can be used to enable or disable certain Render Elements on a per-layer basis. With a Render Element opened in the Attribute Editor, you can right-click on the 'Enabled' checkbox and choose 'Create Layer Override' from the pop-up menu.

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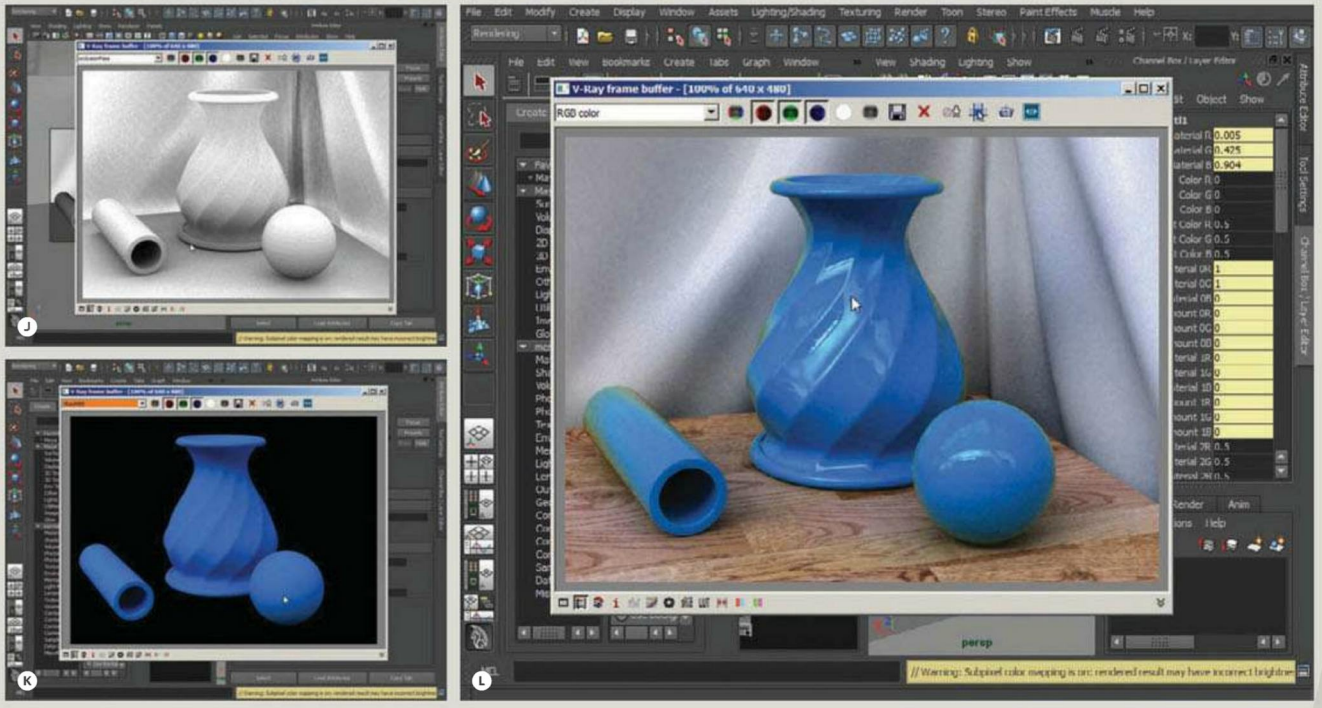


J The Extra Texture element can be used for specialised passes, such as ambient occlusion

K The Material Select element allows objects to be isolated based on their material

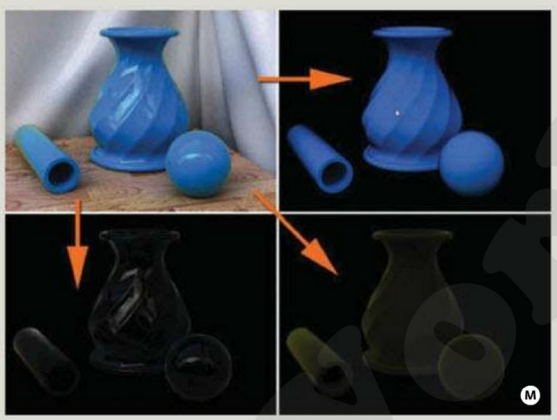
L The V-Ray Blend material can be used to mix the appearance of several different materials

M Use the Material Select element to separate the effects of blended materials

to your scene and open the Attribute Editor for it. The 'Depth Black' attribute should be set to match the distance between the camera and the furthest object in your scene. The 'Depth White' value should be set to the distance between the camera and the closest object in the scene I.

07 Rendering a V-Ray Dirt pass

The Extra Texture element will render a specified texture onto all objects in your scene. Begin by adding an 'Extra Tex' Render Element to your scene. Open the Attribute Editor for this element and expand the 'Extra VRay Attributes' rollout. Connect a 'VRayDirt' node into the 'Texture' attribute of this Render Element. Render your scene and view this new Render Element in the V-Ray Frame Buffer. You will see that all objects in the scene have been rendered with the 'VRayDirt' texture, resulting in an ambient occlusion pass for compositing purposes J.



08 Simple Material Select example

The Material Select Render Element will allow you to take the material from any object in your scene and write it to a separate Render Element. Begin by creating a simple blue-coloured V-Ray material from the Hypershade and assign it to an object in your scene. Now, add a Material Select element to your scene and open this element in the Attribute Editor. In the 'Material' attribute, connect the blue V-Ray material that you just created. After rendering with the V-Ray Frame Buffer, you will see a new element that contains only the objects with this blue material K.

09 Preparing a more complex Material Select example

The Material Select element is particularly useful for separating the sub-materials of a V-Ray Blend Material. Begin by creating three standard V-Ray materials: one blue, one yellow and one that is completely reflective with zero diffuse colour. Create a V-Ray Blend material and connect the blue-coloured material to the 'Base Material' attribute of the V-Ray Blend. Connect the yellow-coloured and the reflective materials to 'Coat Material 0' and 'Coat Material 1' respectively. Now map a V-Ray Fresnel texture into the 'Blend Amount' of 'Coat Material 0'. This should now give the V-Ray Blend material an abstract car-paint appearance L.

Always use Render Elements

The practice of rendering scenes into multiple passes for compositing purposes is a core principle of almost every studio rendering pipeline. The ability to tweak, correct and control nearly any aspect of the shot without the need to re-render is of critical importance. Even with seemingly simple scenes, the process of sweetening and polishing your renders in post is usually much faster than trying to accomplish 100 per cent of your rendering work in your 3D application.

10 Rendering a more complex Material Select example

Assign the previously created V-Ray Blend material to several objects in your scene. Now we can render the sub-materials separately using the Material Select element. Create three new Material Select Render Elements: one for the blue-coloured material, one for the yellow and one for the reflective. Connect each material to its respective Render Element. After rendering through the V-Ray Frame Buffer, the effect of each of these materials will have been written into a unique Render Element. You now have full control over all three materials in your compositing application M.

3DArtist Questions & answers

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The advisors

3ds Max & PShop

Antoine Desjardins
www.coroflot.com/antoined

Antoine is a Canadian artist who specialises in interior arch-vis scenes. This issue he's offering up some tips for textile design... perfect for covering your models

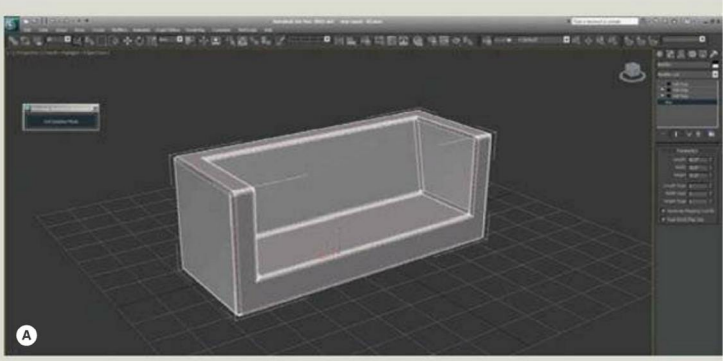
3ds Max/ Photoshop

Fabric for furniture

Could you explain a method for creating realistically rendered fabric using 3ds Max and Photoshop?

The following tutorial is designed to be used as a basic guideline for 3D artists and visualisers who want to create convincing fabrics and textile objects. We'll only need 3ds Max and Photoshop. One of the more challenging aspects of an architectural visualiser's job is rendering couches and sofas accurately. Clients can be very specific when it comes to the furniture that occupies their space. In the past I'd search for hours trying to find that 'perfect' couch. Then I'd have to purchase the model. This wasted time and money. The following workflow demonstrates how artists can quickly create almost any type of seating accurately.

One of the objectives of this tutorial (other than achieving photorealism) is to create a piece of furniture efficiently. I use 3ds Max for all modelling, lighting and rendering. Most intermediate to expert users could complete a sofa or chair using this method in 45 minutes to two hours. Familiarity with the Garment Maker and Cloth modifiers will help.



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modo 601

Warner McGee
http://warnermcgee.com

Our modo master this month is industry artist Warner McGee. Volumetric rendering is his topic of discussion – making fluffy, cloud-like objects

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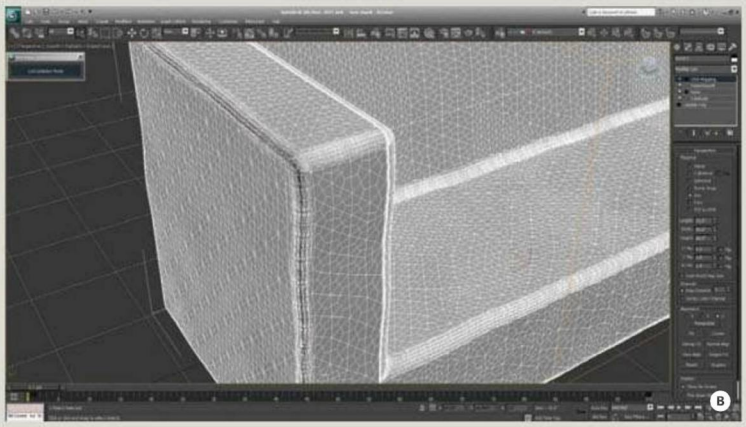
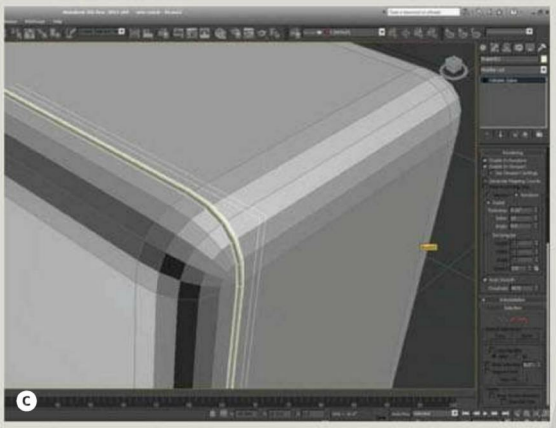
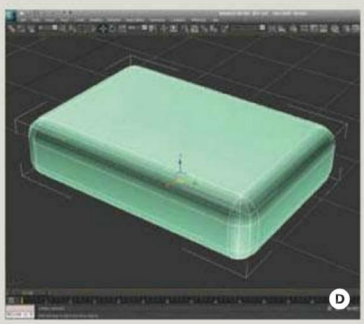


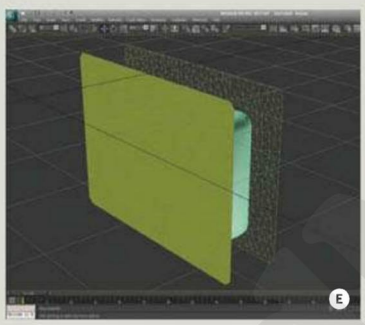


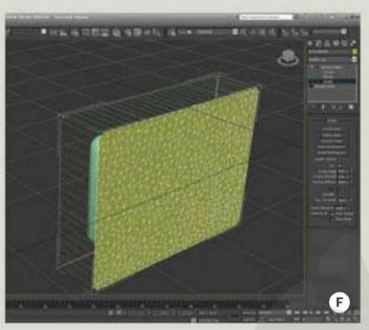
I would advise artists/visualisers to collect as many photographic references of their proposed furniture item. I usually need a few reference hero shots and detail shots before I begin modelling anything.

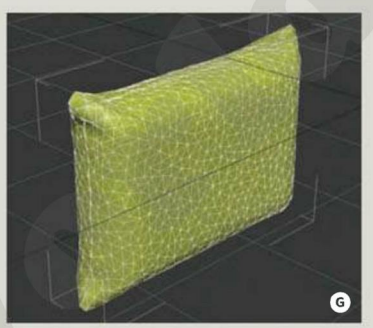
01 Model structural furniture components

Let's start by creating a Box with the overall dimensions of our desired sofa. Add an Edit Poly modifier to the box and start carving out the general shape. Remove all edges and vertices that are redundant. Next, we Chamfer all edges to soften the form A. Now we can start to deform our couch to give it some more character and realism. Add a Subdivide modifier. Add a Noise modifier to give the sofa some bumps, dips and irregularities. I used Freeform>Push/Pull on the arm rests to better match my reference. Finally, we can Turbosmooth the result B.









02 Add piping

Create piping by adding another Edit Poly modifier to your box and clicking on the edge selection tool. Use the Slice Plane tool to create a continuous seam wherever we want piping. Now, select all edges that require piping and Extrude them to create a slight indent. While the piping edge loop is still selected, right-click and Create Shape. Select Linear Shape and name it 'piping'. Now, select your new shape (editable spline) and turn on Enable In Render and Enable In Viewport. We can use a thickness of 0.125" with 12 sides so it looks like a pipe C. Convert it to an Editable Poly and turn on the NURMS Toggle (right-click>NURMS Toggle) to view the smoothed result.

03 Add cushions and throw pillows

We can create a Chamfer Box to use as a form for our cushions and throw pillows D. Create a Rectangle in top view that is slightly larger than your chamfer box, convert it into an Editable Spline, select all vertices, Chamfer by a value of 1", Break All Vertices, and right-click and select Corner. We can now add a Garment Maker modifier to the editable spline and rename it: 'case'. Next, align the case object to the chamfer box using the Panel Position options in the Garment Maker modifier E. Now, create a seam for every matching edge F.

Select your chamfer box and case and add a Cloth modifier. Use the following settings: disable Gravity, enable 1 Self Collision, Check Intersections, Solid Collisions, use Sewing Springs and Show Sewing Springs. Click on Object Properties within our Cloth modifier and set our chamfer box to Collision Object with a Depth and Offset of 0.25 in the collision properties. Also, select our case object and click Cloth and use the Cotton preset (or whatever material you intend to use). Click Simulate Local and the case will conform to the shape of the chamfer box G. Convert your case object to an Editable Poly and select all borders. Next, hold the Ctrl key, select vertices and click Weld. Hold the Ctrl key and select edges and use the same technique outlined in the last step to create piping for your cushions and throw pillows.

3DArtist Questions & answers

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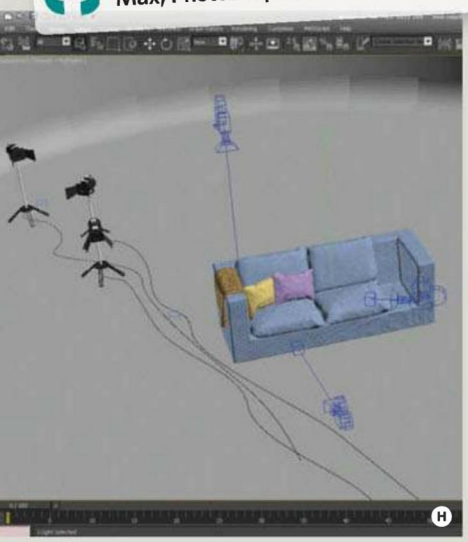
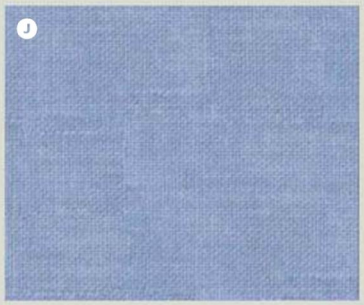
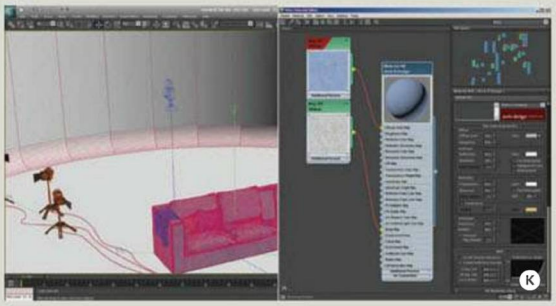


04 Light the scene

Before adding lights, we should create a large Cylinder around our scene, add an Edit Poly modifier to it, Chamfer the bottom edge and add a Normal modifier. Ensure Backface Cull is selected. Light the scene by adding one photometric Target Light. To create a studio type shot, use a uniform diffuse light with a colour temperature of 4900K. Now, in the photometric light properties, set the emit light from (shape) to Rectangle (48" long x 24" wide) H. Apply a matte grey arch and design material to the whole scene (in the Render Setup>Processing tab) and render a few shots from different angles to find an attractive perspective for a camera I.





05 Apply materials

Find a tiled fabric texture J. Open it in Photoshop and create a bump map by desaturating the image and increasing the contrast. Now open your Material Editor in 3ds Max and create a matte arch and design material. Use the fabric image as the colour and the greyscale image as the bump map K. Also, enable a bit of ambient occlusion to give the pillows some more realism. The Garment Maker modifier on the pillows automatically creates a UVW map. To scale a texture on these items accurately, we must use a UVW Xform modifier.

06 Rendering and postproduction

Now, crank the mental ray settings and render the image out. Add a separate ambient occlusion and z-depth pass in the Render Elements tab. In Photoshop, colour-correct and add our ambient occlusion pass on a Multiply blend mode. Also, copy the final render pass and paste it into a new channel L. Use this channel as a selection mask for our ambient occlusion pass. This limits the amount of ambient occlusion on bright areas. Next, copy the z-depth pass and paste it in a new channel. Use the z-depth channel for the Lens Blur filter to create an accurate DOF. Finally, add some chromatic aberration and a vignette (Filter>Distort>Lens Correction).

Key points

Be sure to turn on Backface Cull for your case object (garment) when aligning it to your chamfer box. This way, we can ensure that the normals are facing the right direction.

The most demanding component of this tutorial is using the Cloth modifier to create realistic pillow folds. Keep an eye on your seams when welding the pillow case halves together. If you use a value that is too small, there will be an opening in your pillow and you will not be able to create realistic piping.

One way users may save time is to only create one pillow and make a copy for all throw pillows, back rests and seat cushions. If we apply a new Edit Poly modifier to our pillow case, we can use the graphite modelling tools to deform and scale the pillow's geometry enough so that it can be used in multiple locations.

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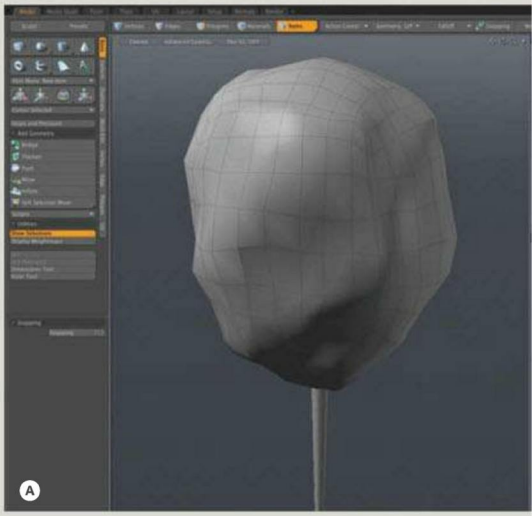

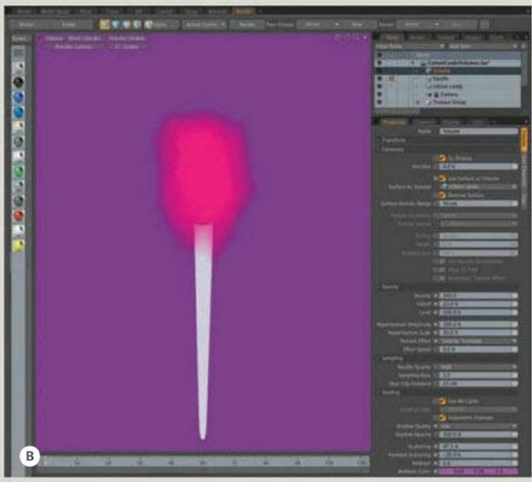

modo 601

Volumetric rendering

How do I create clouds and candy floss-type objects in modo 601?

Creating clouds, smoke and dense or wispy cotton materials is a breeze when using the new Volume item rendering feature introduced in modo 601.

Volume items can be defined in one of two ways: either by using particles as in a particle cloud or a mesh surface acting as the volume boundary. Each approach has its own advantages and reasons for use. For this project we will be using a mesh surface to define the boundary of the volume for our cotton candy but first here's some information about the Volume feature in general.

Volume items have their own properties that can be adjusted to suit your needs. The Density, its Falloff, Sampling, Shading Quality Scattering and texture effect presets like Pyroclastic can all be independently adjusted, giving the user a wide gamut of control over the initial shape and feel of the Volume item. Additionally (and one of my favourite features) is the use of procedural textures with. Users can select one (or more) textures from modo's library of procedural textures to apply to the Volume item. These textures can be set to affect and modulate the Density, Absorption, Scattering and other properties. Textures can be applied straight from the library using the default settings or the Texture Properties like Scale, Rotate, Blend Mode and Opacity can be modified, giving the advanced user yet another level of control.

Because Volume is an Item option, it can be animated to include the many properties and channels that other items benefit from. If any procedural textures are applied to the Volume item, its Texture Locator properties can be animated as well, adding another animation layer. Finally, deformers can be applied to the mesh surface to create bending, twisting effects that the Volume option will follow in turn. With this amount of control and flexibility, what you can create is only limited by your imagination.

With the soft and billowy nature of Volume items you might think that previewing and rendering would be slow, which isn't the case. Because they only appear in the preview window, live

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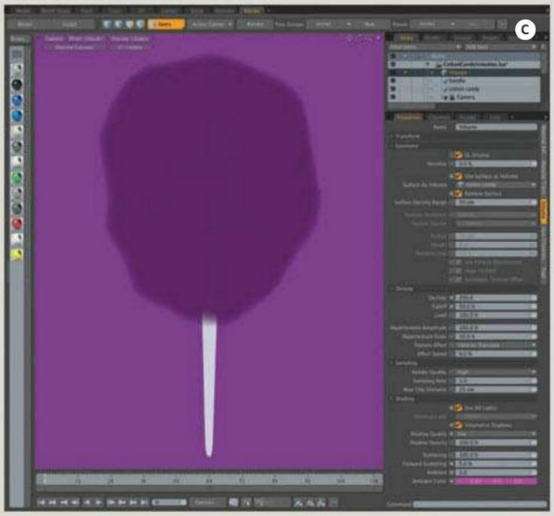

feedback is critically important. You can navigate through your scene in the preview window with ease, enabling you to work at a speed that may even surprise you given the complexity of the material. Here are a few tips to keep in mind for speedy performance when rendering. Under Light>Properties in the scene, use Deep Shadow Maps. In Render Properties, under Settings and Antialiasing, keep your Environment Shading rate at 1.0.

01 Create the geometry

Start by making a quadball with three subdivision levels and apply slight Jitter deformation to the mesh for a more natural shape. This will in effect be the armature of the candy cloud. Name the mesh Candy and assign a material to it. The actual Diffuse Color of the material does not matter, so it can be kept at its default. The colouring of the candy will come from the Scattering Color and Absorption Color found in the Material Trans section under Volumetrics, explored in the later steps A.

02 Add a Volume item to the scene

From the Item list add a Volume. Choose Use Surface as Volume and select the Candy mesh. Select Remove Surface to hide the geometry of the sculpted quad ball mesh, revealing the Volume item. To visualise the scene, select the Environment Material from the Shader Tree and choose a rich, constant colour (like a medium-to-dark purple) as a backdrop. Adding a coloured background is aesthetic but can help you pick a colour for your candy object B.

03 Adjust Properties options

The look and feel of your cotton candy will vary, so these figures should be used as starting points for you to adjust and play with. In Volume>Properties, increase the Density to 250% and Falloff to 50%. Set Sampling to High for the Render Quality and the Shadow Quality to Low. Reduce the Forward Scattering to 0 and set the Ambient Color to a saturated, medium-purple colour C.

04 Turn on the lights

Volume items need to be lit properly or they will appear flat. By using a classic two or three-point lighting setup you will achieve the nice balance of a well-lit subject with the proper volume. Using a Spot or Area light offers more directed illumination and creates some needed drama for the shot. Consider adding some colour to the light materials to get temperature shifts in the candy. For faster rendering select Deep Shadow Map for each light D.

05 Shape your object

In the Shader Tree add one of modo's enhanced textures (Space-Swirl) and change its Effect to Volumetric Density. Play with the various properties to get the desired stringy look of cotton candy. Create an instance of the Swirl texture, set its Blend Mode to Multiply and lower its Opacity to 70%. Additionally, you can choose to place a Noise texture with its effect set to Volume Density and its Blend Mode set to Add E.

06 Colour the candy

To achieve the rich pink and purple colours found in the cotton candy, we need to use the Scattering Color and Absorption Color. Look for these settings under Material Trans>Properties and the Volumetrics option. Set the Scattering Color to light pink and the Absorption Color to a saturated cool Green. Using a green colour for our pink candy might seem counterintuitive but this is the colour that is being absorbed and not reflected by the Volume item. Now you're ready for final checks and rendering F.

Volume at play

Volume items are one of the many cool and useful new features in modo 601. The most important consideration when working with them is to experiment with the settings. Try to keep your models in real-world proportion so your rendering will be consistent. It's important to know in general what the settings do and how they behave, interact and relate to one another, but don't be afraid to bend or even break the rules. If you focus on the visual results when adjusting your settings, you'll be in for a treat when using the new modo 601.

Back to basics

Roald Høyer-Hansen shows us how Unity can be used to create your own interactive photo studio

On the Disc

Unity project files and 37 minutes of video footage

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UNITY

An artist's introduction to Unity

Roald Høyer-Hansen demonstrates Unity for artists, creating a simple but semi-realistic studio scene

One of the most fascinating aspects of the 3D industry is the constant progression of tools, techniques and innovation. This, combined with the ever-growing pool of creativity and inspiration, is why I love 3D so much. There is always something new and exciting happening, both software and hardware-wise, and every now and then we'll see mind-blowing stuff that revolutionises the industry. To me, one of those revolutions is happening right now in the form of the Unity game engine.

Having used a couple of different game engines prior to discovering Unity, I was blown away by its intuitive and artist-friendly design. It was almost like being a kid again; playing with Lego and creating my own fantasy worlds. Without any coding or advanced rocket science knowledge, this engine actually lets you play and interact with your art in no time. It is so easy to use Unity that I didn't initially think a tutorial would be necessary, but since sharing knowledge is always a good thing, I'm going to show how, as an artist, you can get the most out of this wonderful piece of software.

Over the following pages I will guide you through the creation of a simple yet semi-realistic scene in Unity, complete with lighting, image effects and various tips and tricks. I've chosen to focus on a photography studio scene for this tutorial, as I thought it could be a nice way to show off the Unity workflow for beginners. Before we start though, I would like to talk about some of Unity's features and settings that are important to know for Unity beginners:

Scale – Before we dive into the juicy parts, I cannot stress enough how important scale is when working with Unity. Not only is it important if you're doing physics calculations inside the engine, but scale also affects pretty much everything

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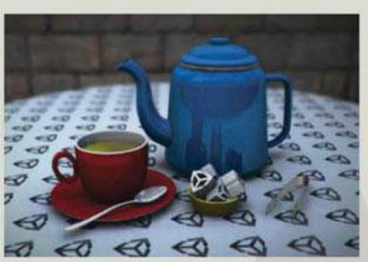
else, from lighting calculations to image effects. Therefore, make sure that the models you bring into Unity are scaled as if they were to exist in the real world.

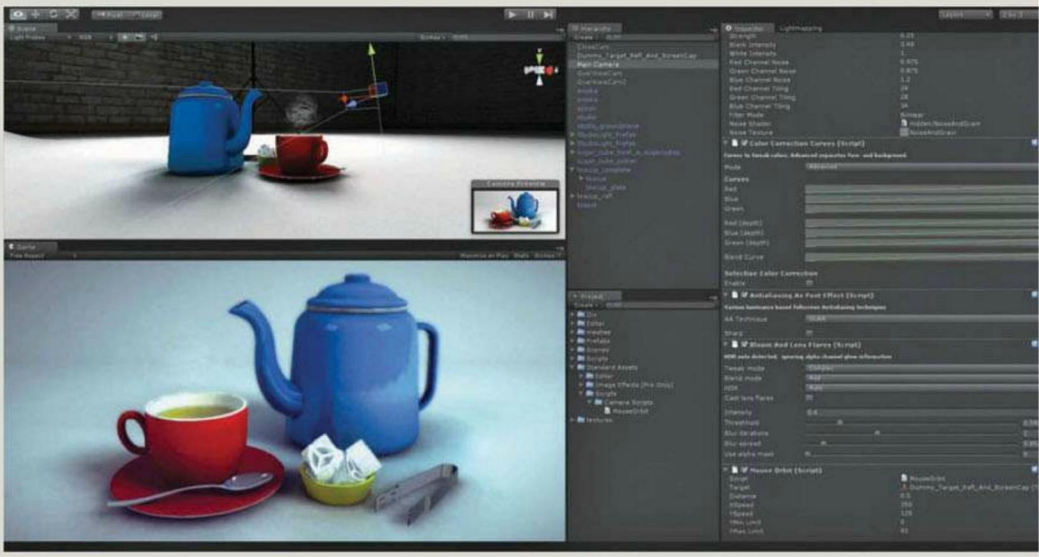
File Formats – One of Unity's strongest selling points is that you can pretty much save any 3D scene from the most popular 3D packages into your project folder and it simply works. You will see your 3D models, fully textured and animated in Unity, and changes you make in your 3D application are immediately reflected in Unity. As a 3ds Max user myself, though, I don't really recommend working that way – especially if you're working in a team. The main reason for this is that if other people in my team want to edit the models, they will also need to have 3ds Max installed. I therefore always export my models manually using the FBX format, which works flawlessly 99 per cent of the time.

Pivot points – This isn't crucial, but if you want to import your models 100 per cent correctly into Unity, you should make sure the pivot points of your models are imported correctly. This varies between software packages, but I suggest that you do some test exports, using different pivot point rotations. Often, programmers ask us artists for 'clean' models – so if you should ever meet one of those, knowing how to export clean models will definitely be a good thing!

Ambient light – By default, the ambient light in Unity is more grey than black, which may result in your scenes looking washed out. To change this, head to Edit>Render Settings and adjust the Ambient Light colour. It took me a while to figure out this, but it can make a decent-looking scene into an awesome one!

Lights – In Unity you have four different light types to choose from, but you can also light your scenes using light-emitting materials, global illumination and HDR maps if needed. Point lights, spot lights and directional lights give you real-time feedback in the editor, whereas other light types need to be baked as light maps using the built-in Beast lightmapper. With the introduction of the deferred rendering technique in the Pro version of Unity, artists can now also put an extraordinary number of lights in their scenes, without affecting performance.





Beast lightmapper – Spending some time experimenting with the built-in Beast lightmapper is highly recommended. Not only can it transform flat and dull scenes into vivid scenes with depth and colours bouncing around, but it will give scenes a performance boost as well. With the newly released Unity 3.5, the introduction of light probes makes this feature even more powerful, making static lightmaps interact more realistically with dynamic objects. This system was used for games like *Mirror's Edge* and *Medal of Honor*, and is continually being improved for the next wave of games.

Image effects – These have become quite powerful over the last couple of years, and this is probably where many artists have the most fun. You can currently choose between 29 different image effects in the Pro version of Unity, but if you're surrounded by programmers you can always beg them to make new ones for you. I usually tend to stick with the Depth of Field, Vignetting, Color Correction and Bloom & Lens Flares effects, but you should play with all of them to see what possibilities you get. Keep in mind that you need the Pro version to be able to use the image effects.

Materials/shaders – When importing your models into Unity, they are automatically assigned a default diffuse shader that makes models look darker than the originals. This is easily fixed by adjusting the Main Color when selecting the object in the Inspector, but keep that in mind if your models look different than the ones you see in your 3D application. The materials, or shaders, in Unity will also contribute to how your models end up looking, so you should spend time getting to grips with some of the more basic types, such as the bumped specular, reflective specular and transparent ones. I also recommend having a look at the excellent Strumpy Shader Editor, which is a free plug-in that makes creating complex shaders quite easy, even for non-technical artists!

Shuriken particle system – Most 3D engines offer some kind of particle system, but few are as powerful as the new Shuriken particle system in Unity 3.5. Having been developed from the core up, this system gives you full control over your particles, from birth to death. It would require a full tutorial just to go through the basics of this marvellous system!

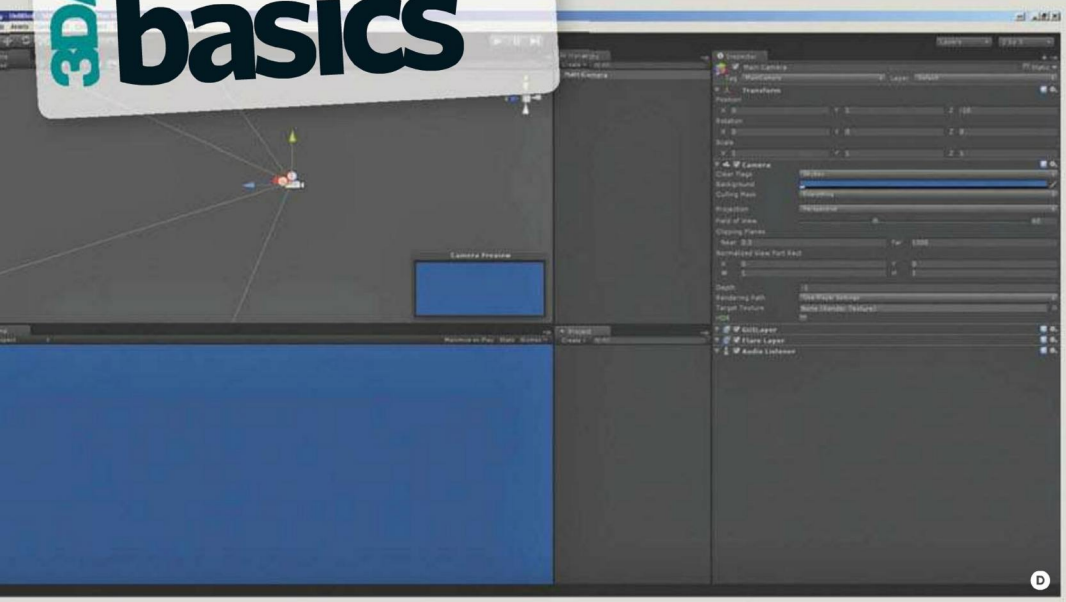
With all this in mind, let's enter the Unity sandbox and play around with the features to build our photography studio scene...

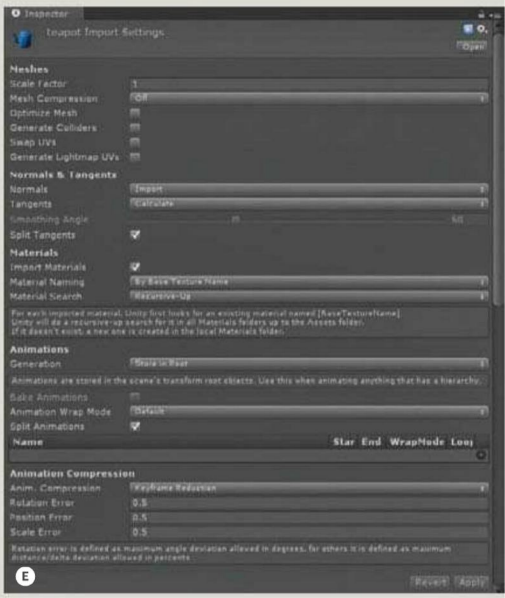
A Using the built-in lightmapper and various image effects, you too can create scenes like this

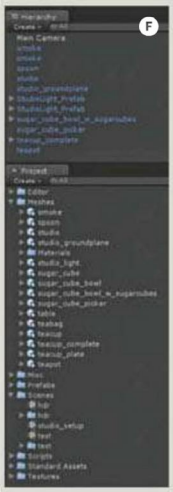
B Creating interactive content has never been so easy!

C Unity can be used for far more than just games!

3DArtist Back to basics







D The Unity Editor is highly customisable

E Importing assets couldn't be easier!

F Keep it clean! It will turn into a mess sooner than later

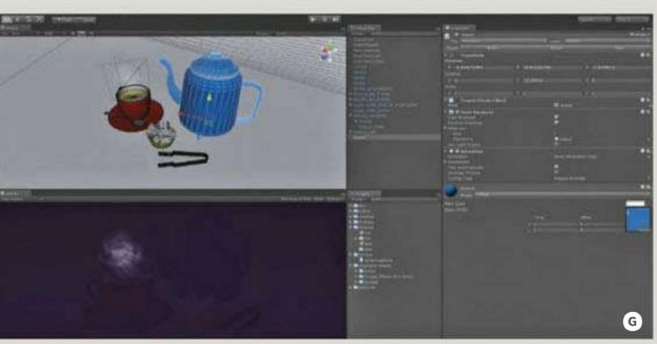
Putting it all together

01 Unity – at first glance

The Unity Editor consists of many panels and windows and is highly customisable. The Scene view is where we'll spend most of the time creating our scene, whereas the Game view shows us what our game/scene will look like when played. The Hierarchy panel shows us all the assets being used in our scene and the Project panel lists all the assets in the entire project. When selecting assets, either in the Project panel or Hierarchy, the Inspector panel is used to view and edit their properties D.

02 Importing assets

Importing assets into Unity couldn't be simpler. I usually just drag and drop my models and textures straight from the computer desktop into the Project panel, but you can also right-click in the Project panel and choose 'Import new asset'. When selecting an asset in the project view, you will see its import settings in the Inspector panel. Here we can set the import scale, generate colliders and lightmap UVs and automatically calculate normals and smoothing groups. This is also where we can define our animations if we have several of those in our imported model E.



03 Keep it clean

Having worked on numerous projects, I've learned the hard way that keeping a clean folder and naming structure is a must. Especially if you're working in a team, this will keep all your team-mates happy, as things tend to turn into a mess pretty quickly! I usually create folders for meshes, textures, scripts, prefabs and animations. If I don't know where to put something, I always have a 'misc' folder lying around. For my 3ds Max files, I like to save them in their own folder, outside the Assets folder F.

04 Building the scene

Getting your assets into the scene is simply a matter of drag and drop from the Project panel into the Scene or Hierarchy view. I usually drag my assets into the Hierarchy, as they will then be placed in the centre (0,0,0) of the scene and not two kilometres away. Translating the assets in the scene is then done using the 'universal' W, E and R keys on your keyboard, while viewport navigation is done using a combination of the Alt button, right-click, middle-click and the WASD keys G.

05 Let there be lights (and prefabs)

With the scene assembled, it's time to brighten it up and get some lights set up.

Prefabs in Unity

Working with prefabs in Unity can be a real lifesaver, and the concept is pretty simple. Imagine it as a custom object you create in your scene that you would like to reuse in other scenes or projects. In this case, the studio light is a simple but perfect prefab example, where the area light is linked together with the studio light model. Changes you then do to the prefab can either be applied to the other cloned prefabs in the scene or their separate settings kept. To create prefabs, simply drag your object from the Hierarchy to the Project panel.

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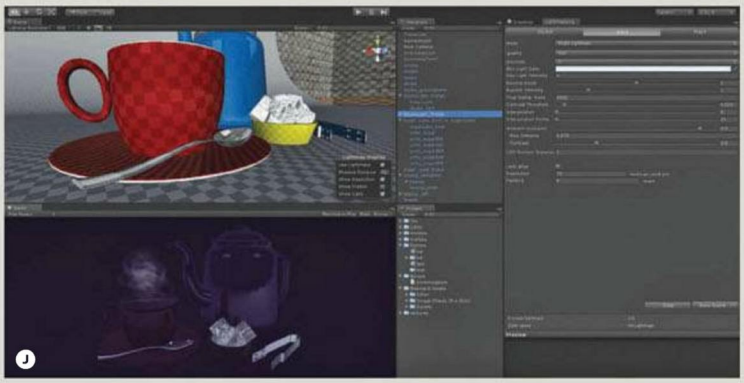


G Almost like playing with Lego again

H It's time to brighten things up!

I Materials in Unity are very powerful

J Your scenes will come to life with Beast

K Image effects equals fun!

L This marks an important step

M Time to share your creation

For this tutorial I am using two area lights, which give very nice and soft shadows, but using normal spotlights with a soft shadow should work pretty well too. You create lights by going to the Gameobject>'Create other' menu and tweak its settings in the Inspector H.

06 Setting up materials

When importing assets into Unity, they will automatically be given a default diffuse material, but that's not what we want for most of the objects in this scene. By selecting the object you want to change, you will see its material in the Inspector panel. I've changed most of the porcelain materials to a Reflective/Diffuse specular in this scene and added a diffuse specular to the studio ground plane. I've also given the walls and sugar cubes a bumped specular shader, using alpha maps to control the amount of specularity. For the studio lights, I've ended up using a Self-Illum./Diffuse material I.

07 Unleashing the Beast lightmapper

Unfortunately, the area lights I've used in my scene don't give me any real-time lighting feedback, so the only way to set up proper lighting is to lightmap the scene and see how it looks. Before lightmapping any scene in Unity, you must make sure that all the objects you want to be affected by the lightmap calculation are marked as static objects. The next step is to open up the Beast lightmapper, found under the Window>Lightmapping menu, and do some test renders by clicking the 'Bake scene' button. After some testing back and forth, I finally ended up with some decent lighting J.

08 Final polish with image effects

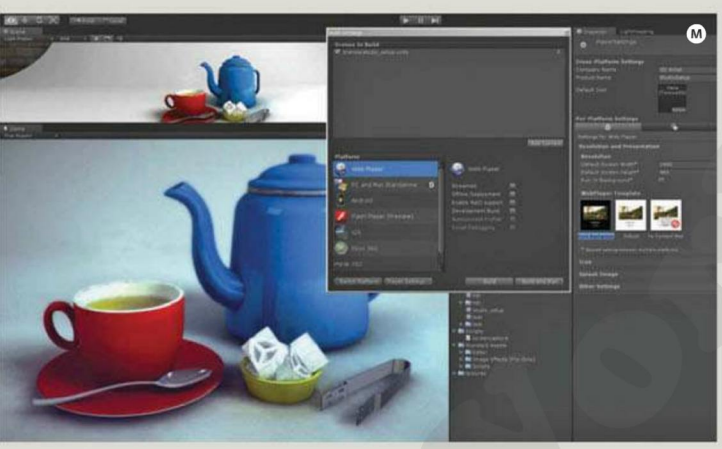
The key to getting good visuals in Unity is of course primarily about the art assets, but sometimes adding image effects can add a lot to the final output. For this scene I knew I needed at least some depth of field, some minor vignetting and some colour correction. The pro version of Unity comes with all these, so by right-clicking and selecting 'Import package/image effects', I could quickly drag and drop the effects I needed onto the Main Camera in the Hierarchy view. It's then possible to easily tweak the settings and get real-time feedback in the Game view K.

09 Quality settings

To be able to get the most out of the graphics, we would need to do some minor adjustments to the quality settings in Unity, so by going to Edit>Project settings> Quality, we will set everything to Fantastic. We'll also set the Texture Quality to Full Res and ignore the rest. If we had real-time lights in the scene, we could also boost the shadow quality, but since everything is baked in this scene, we don't have to worry about the shadow settings L.

10 Build and export

Unity's ability to export to a wide range of formats is also one of its strongest selling points. For this tutorial we will export our scene in the Unity Web Player format, so that people can experience it in their web browsers. Selecting File>Build Settings, we add our current scene to the build and choose the Web Player output option. In the player settings we can also define the resolution and Web Player template – so, for this tutorial, a black background template seems perfect. Clicking the Build And Run button does the rest of the magic – and, if everything works as it should, the scene will open up in your default web browser M.



Create reflection cubemaps

For added realism, all of the reflective objects in this scene use separate static cubemaps for reflection. In a game scenario, though, for the sake of optimisation, they would most likely use the same one. To create unique cubemaps for each reflective object, with the Pro version of Unity you can use a freely available script to bake cubemaps from the desired position in the scene. Another tip is to experiment with gradient textures in your Image application and import those as a 'Reflection Texture' inside Unity. It's amazing how a well-made gradient can liven up your materials!

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Armari Magnetar X32-AW1275 £4,695 ex VAT

Armari provides another glimpse of the awesome power provided by Intel's new Xeon E5, housed in a bespoke workstation chassis

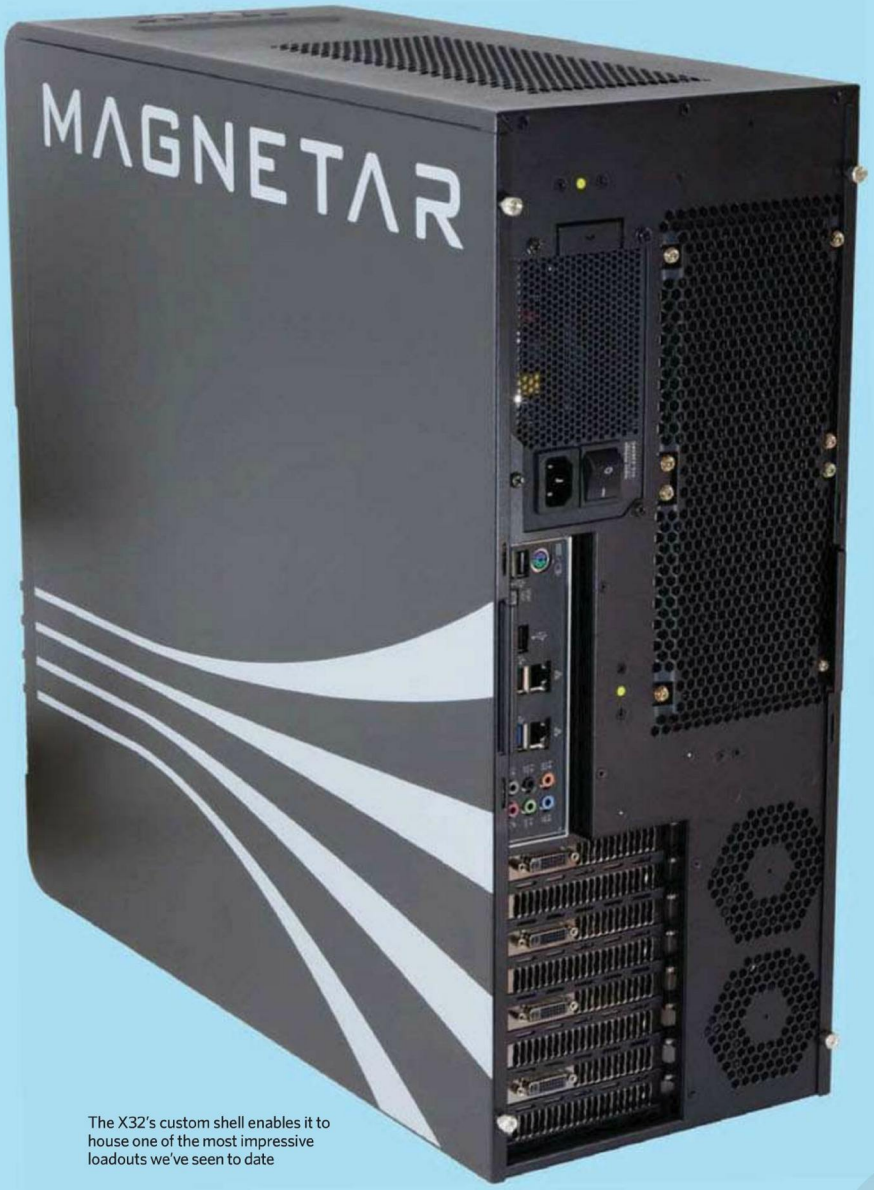
Intel's latest processor, the Xeon E5, provides the awesome power behind this formidable workstation

Recently we saw the arrival of a phenomenal new processor from Intel, which looks set to take the workstation market to a new level. Offering eight physical cores per chip, and available in dual-processor configurations, Intel's Xeon E5 promises unprecedented performance for workstations. But the new chips can also produce that little bit more heat than the previous generation. So, with the Magnetar X32, Armari has also taken the opportunity to introduce its own custom-designed chassis at the same time.

The Magnetar X32's case is noticeably heavier than a regular off-the-shelf chassis, which means moving it around an office or between locations will require a strong pair of hands. But it looks amazing, with Armari's logo stencilled on the side and LED lighting on the front vents, the colour of which can be user-configured with a button on the rear. The main reasons for the custom design, however, are the internal features it enables. The watercooling is able to dissipate heat from the processors with minimum noise, and there are a total of 12 drive bays, with up to 20 being possible through extras and hot-swap backplanes available too. There's even an optional bracket to keep heavy graphics cards in place during transit.

The beefy chassis provides a fitting home for the substantial components. Armari hasn't opted for the top Xeon E5s in this specification, but instead is using a pair of the more cost-effective E5-2670, which run at a nominal 2.6GHz. However, thanks to Turbo Boost, all eight cores can operate at up to 3GHz for extended periods and two cores can bump up to 3.3GHz for short bursts of power. So you get the best of both whether your application uses a couple of threads (such as when modelling) or every thread available (such as when rendering). The latter is further enhanced by the Hyper Threading facility, which splits each physical core into two virtual ones, for a grand total of 32.

The two processors are backed by a healthy 32GB of 1600MHz DDR3 SDRAM. This is arranged as two banks of four 4GB DIMMs each, to take advantage of the bandwidth available from the new Xeon's quad-channel memory architecture. This still



The X32's custom shell enables it to house one of the most impressive loadouts we've seen to date

leaves eight slots free for further upgrade. An AMD FirePro V7900 with 1280 Stream Processors and 2GB of GDDR 5 takes care of hardware 3D graphics acceleration. This is a potent card, able to give the latest NVIDIA generation a run for its money. Storage takes the familiar route, with a super-fast solid state disk taking care of operating system and apps, in the shape of a 240GB Intel 520 Series, while a conventional 2TB Hitachi Deskstar 7K3000 7,200rpm hard disk provides plenty of capacity for general data. There' even a LG Blu-ray rewriter and memory card reader included, for substantial storage provision.

Intel's new Xeon is all about performance, and the score in Maxon Cinebench R11.5's render test is phenomenal. The result of 22.45 is the fastest we've ever seen, even quicker than Workstation Specialists's WS 2850. The Cinebench OpenGL score of 66.53 is also an impressive outcome, and again ahead of the WS 2850. However the SPECviewperf results are more of a mixed bag. The score of 51.54 in lightwave-01 is decent but not quite up with the quickest we've tested, and the middling maya-03 result of 33.40 shows the variable abilities of the AMD graphics when you compare them to NVIDIA's Quadros.

Amazingly, despite the powerful components and bespoke chassis, the Magnetar X32 is still quite reasonably priced at significantly less than £5,000. With the rendering performance of a whole network from a few years ago, and decent modelling abilities too, the Magnetar X32 illustrates yet again that Intel's new Xeon E5 is a force to be reckoned with in the future.

The good & the bad

- ✓ Unbeatable rendering
- ✓ Decent modelling
- ✓ Comprehensive storage
- ✓ Reasonable value
- ✗ Modelling performance doesn't match rendering ability

Essential info

www.armari.co.uk

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- 2GB AMD FirePro V7900
- 240GB Intel 520 Series solid state disk
- 2TB Hitachi 7K3000 7,200rpm SATA hard disk
- LG Super Multi Blu-ray rewriter
- Windows 7 Professional 64-bit
- Warranty: One year onsite; second and third years RTB (parts and labour)

The front vents feature LEDs that can alter in colour

Our verdict

Features	10/10
Performance	9/10
Quality of results	9/10
Value for money	9/10

"With incredible rendering performance, decent modelling, fully featured storage and a custom-design chassis, this is a workstation of the utmost quality"

Final Score 9/10

The Character Animation features such as the Full Body IK, the Pose tool and deformers open a world of possibilities

Render Booleans enables you to visually subtract out parts of your scene with other meshes or 3D shapes

The Pose tool lets you create poses for characters without complex rigging

modo 601 $1,195 US

One of the biggest 3D applications, built with artists in mind, just got bigger with its new 601 release

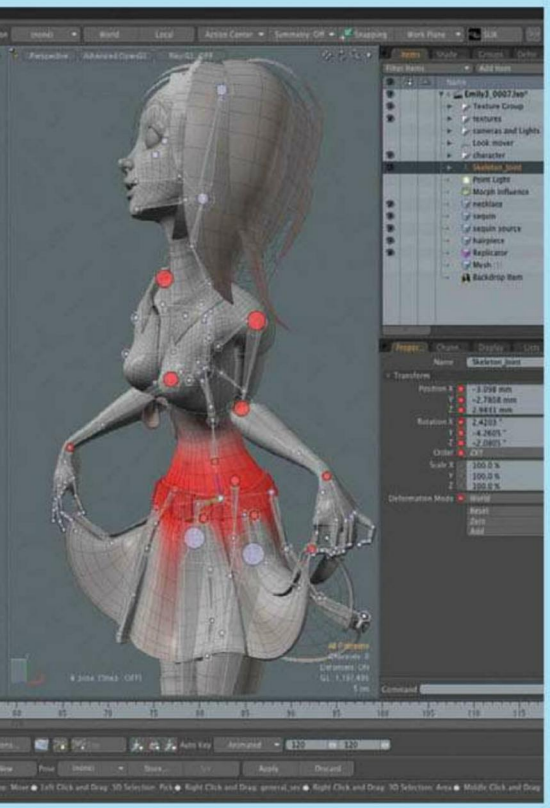
It's one giant leap for modonauts with the release of Luxology's latest offering. With the early spring launch of modo 601 there are multitudes of new features and enhancements that have blossomed onto the 3D scene. From the beginning Luxology has considered modo a tool for artists, and 601 continues to expand this idea into many different creative and technical branches of the artistic process. There are far too many to discuss them all, but here's a glimpse at some of the best.

Retopology has been introduced and given its own tab, there's also a new background constraint called Point which keeps new topology glued to the background surface. There are a host of useful topo tools, but the workhorse is the Topology Pen. You'll be using this tool most of the time. To unlock its full power you'll find its intuitive Modifier keys perfect for making your retopo work faster.

Character Animation tools and Deformers in their many forms are among the most significant features in 601. Some of the top features in this CA toolkit include Full body IK, Bones (Joints), Falloff deformations, the Pose tool, Actors/Actions/Poses, various Binding options (including those used in gaming engines), weight painting and adjustment tools round out the toolset for creating simple skinned characters.

A host of expected deformers like Transform, Spline, Magnetic and others are included. Layering deformation effects enable creative solutions to challenging tasks and offer flexibility over more conservative systems.

Retopology tools in modo 601 are amazingly fast and intuitive to use



Selections have been at modo's core since its beginning, helping artists to work quickly and intuitively. Well, it just got a whole lot cooler and more useful with its new Soft Select suite of tools. Move, Rotate, Scale and Transform tools use the new Soft Select falloff to work its magic. Users can interactively expand or contract the influence area in the viewport using RMB.

Replicator enhancements in 601 include a full shading of replicas in the viewport, random time variations work with deformers and a huge improvement of a new map type called a Particle map which respects deformations. This map type enables you to use the various transforms of Rotate, Scale and Move with individual replicas.

Beautiful rendering has been a widely celebrated feature of modo and thoroughly enjoyed by modonauts. A new render item called Volumes has been introduced, changing the landscape of the imagery coming out of modo. Render Booleans are non-destructive and enable individual surfaces to be rendered with a 'cut away' look that is great for mechanical and architectural renders. Volumes will create some of the fluffiest clouds you can dream up or the softest cotton candy. Render Rounded Edges creates a controllable rounded edge between overlapping geometry, giving the appearance that they are joined. Also, this feature takes hard edges and eases them in the render. Very slick indeed.

Some new and really cool shaders are a non-photorealistic Halftone Shader, Hair Shader, Matcaps (great for sculpting) and a new specialised Skin Shader with multiple dermis layers.

Render Passes are new to 601, giving much more flexibility, automation and control with your renders for use in postproduction work. Having the ability to choose which scene attributes to use is a huge time saver and a welcome addition for those requiring various outputs of the same scene. Different pixel resolutions, materials, render outputs and more are also available.

Softbody Dynamics in modo is called Recoil and has now been integrated into 601, enabling users access to soft bodies. Ropes, Pinning and Mass maps are usefully added to the program's substantial functionality.

With 601's addition of these and other features, it's clear that modo has leapt forward and landed firmly.

The good & the bad

- ✓ Speed of modelling, UVing, rendering, Retopology
- ✓ Exquisite rendering abilities
- ✓ Innovative order of Operations Deformers
- ✓ Intuitive UI and toolsets
- ✓ Smooth and versatile 3D pipeline integration
- ✗ Lack of documentation or explanation of the new features
- ✗ Slower with heavy scenes than previous
- ✗ Underdeveloped fur and hair system

Essential info

www.luxology.com

• $1,195 USD

OPERATING SYSTEMS

- Windows 7, Vista and XP (32 and 64-bit)
- Mac OS X 10.6 or later (32 and 64-bit)

OPTIMAL SYSTEM REQUIREMENTS

- Minimum 2GB RAM
- Minimum 2GB available hard disk space
- OpenGL 2.0 accelerated graphics
- Internet connection required for activation
- Intel Xeon/Core 2 Duo, Quad/Core i7 or AMD Opteron/Phenom processor (PC)
- Intel, Core 2 Duo processor or higher (Mac)

Render Rounded Edges lets you visually round edges or smooth intersecting geometry

Our verdict

Features	8/10
Ease of use	9/10
Quality of results	10/10
Value for money	10/10

"With each update modo moves closer towards being the first choice for all your 3D needs"

Final Score 9/10

The Hot Rod Art Book: Masters of Chicken Scratch £6.99

A collection of awesome vehicle art, courtesy of Dwayne Vance

For many, custom hot rod cars are the epitome of cool – whether it's building your own for real or digitally, there's no doubt you can get a great deal of satisfaction from the process. Dwayne Vance is known in the industry for producing top-quality cars using a variety of software. *The Hot Rod Art Book: Masters of Chicken Scratch* offers an interesting insight into the workflow of this talented artist.

Adapted from the print edition for both iPad and iPhone, Dwayne's book has also embraced the digital media by offering workflow videos for its readers. It's helpful to watch as the vehicle takes shape, showing Dwayne's various techniques and menu selections along the way.

The app itself is relatively easy to use with arrows in the corners to denote page turning and buttons at the bottom to flick between video and regular pages. It's a shame that swiping the pages themselves doesn't flick forward, but it's a minor issue really.

While the £6.99 price may seem steep, it's not too bad considering the physical book is $40. What's on offer will no doubt act as great inspiration for many artists with a passion for custom-built vehicles.

Flick through the book page by page or watch the workflow videos – the choice is yours

www.futureelements.net

Our verdict

Features	8/10
Ease of use	8/10
Quality of results	8/10
Value for money	6/10

"An insight into the workflow of this talented artist"

Final Score 8/10

Mara3D – David Giraud Male Anatomy £2.49

An intuitive reference app for artists

Having a good understanding of the human form can mean the difference between creating a dodgy-looking character and a believable one. Having said that, decent references can sometimes be hard to find. Industry artist, David Giraud hopes to change that with Mara3D.

This mobile art reference app offers six different male anatomy poses, which you can navigate round using your iPad, iPhone or iPod touch-screen controls. What's more, you can apply four different layer modes to your chosen pose to focus on different areas. Browse through Skin, Grey écorché, Colour écorché and Silhouette to pick or change the result that you'd like to work from.

You can zoom in and out, left and right, spin the subject round turntable-style to get an all-angle view of the human model. You can also tweak the lighting by selecting the light bulb icon at the bottom of the screen.

The fuss-free interface means that the simple control panel can appear or disappear with a tap, allowing for minimal distraction while you're at work.

Overall, Mara3D is a great, quality anatomy app that's simple and intuitive to use. However, we were somewhat disappointed to find that the female form has to be purchased separately.

Browse through six different poses; tweak the lighting and layer modes to get the result you want to work from

www.mara3d.com

Our verdict

Features	7/10
Ease of use	8/10
Quality of results	8/10
Value for money	6/10

"The functionality makes it worth it, though female poses aren't included"

Final Score 7/10

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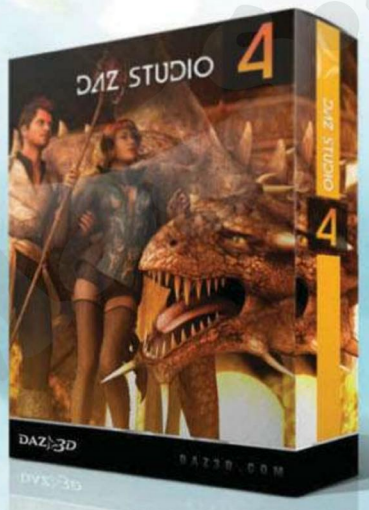
- **Cost effective**, easy to use, complete



DAZ 3D

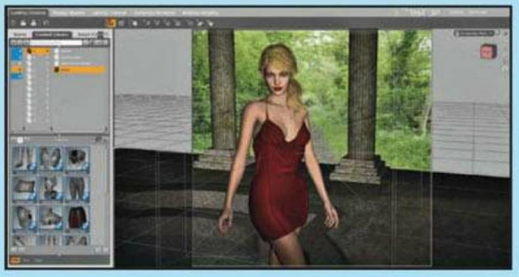
WWW.DAZ3D.COM/STUDIO

3D Model Pro Suite

£125/ $199

Get started with the new Genesis figure with this pack of poses, models, hair and clothing

This is the Victoria 5 figure with hair, clothing and facial textures from the Model Pro pack, rendered on the high quality setting



Here is some of the new content for Victoria 5, including the Alruna collection of woman-warrior gear that can be found in the Content Library

Add a directional light, some props, set up a camera with a shallow depth of field and we're ready to do a test render

When DAZ 3D launched Studio 4 the big news was not the improved, user-friendly interface, but the accompanying Genesis figure that offered far more user-configuration and better-fitting assets.

No surprise then to see the standard Victoria 4 model being updated as a Genesis figure into Victoria 5 that also has a content pack. The Model Pro Suite adds a Genesis starter bundle to the Victoria 5 Pro bundle, giving you more content and configuration possibilities. If you use Studio 4 Pro – which is currently available as a free download – you can also export scenes directly into Photoshop. Unfortunately the DAZ Bridge into Photoshop only supports up to CS3, which is very disappointing considering Adobe is about to launch CS6.

To the content then, and the Genesis starter bundle includes some new morphs such as troll, casual surf wear, a scoopback mini-dress and Hampton hair that has an impressive number of styles. The Victoria 5 bundle includes the Starter bundle which has poses and starter outfits, Chelsea hair, Alruna warrior kit, Magna Hart and Tori as well as a group of expressions. There's also a ponytail hair style, a bikini outfit and a selection of ethnicities.

Needless to say, all these items require a lot of installing, but you have to install each item individually as there is no coherent installer. What's worse is that some of the installers default to outdated content locations, so you have use the custom install for every single one. Also some of the installs are dependent upon others so you have to install them in the right order as well or they won't install in the first place, which is poor.

When using content, the Victoria 5 Genesis model really is easy to fit items to, though it isn't faultless as one high-heeled shoe disappeared through the scene plane in our test. Despite this, it's easy enough to adjust though and all a lot better than with the previous model. There's also a variation called the Victoria 5 Supermodel. Poses for Victoria 4 can be applied to the new version and work well. What is apparent is how much slower the system is thanks to the automated mesh smoothing, but you can't have everything and it's a price worth paying.

The important feature of this package is not the amount of clothing supplied, because that's fairly modest, but the hair, styles, poses, morphs, expression and ethnicities as well. It makes for creating different looks to the standard figures quick and easy, though the package isn't particularly cheap.

www.daz3d.com

Our verdict

Features	7/10
Ease of use	6/10
Quality of results	6/10
Value for money	5/10

> Worth buying if you are intending to create a lot of different styles of Genesis figures

Final Score 6/10

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"I saw an image on a website that was like a kind of transparent man blending with his background, which brought me this great idea... [I] decided to show the feeling of part drying paint, part real, part plaster"

Non-US readers turn to page 90

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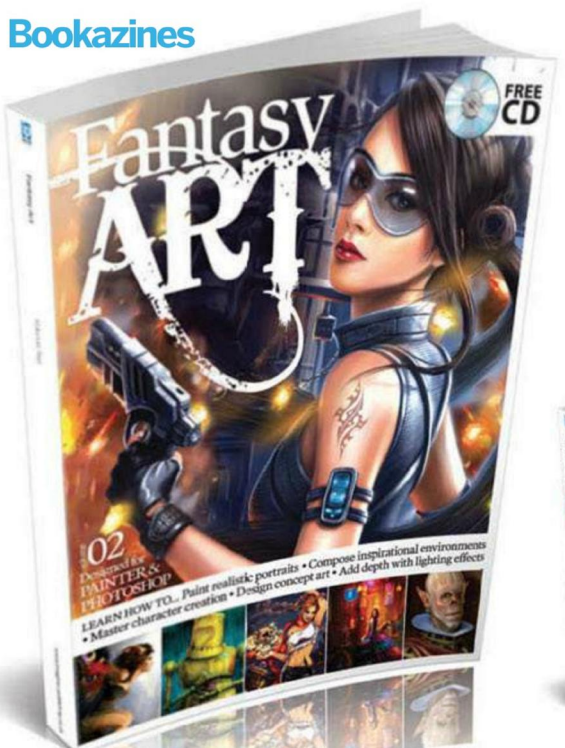
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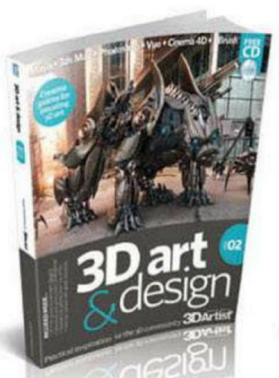

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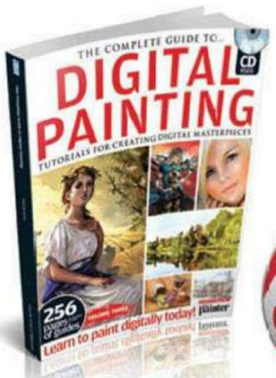

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Inside guide to industry news, studios, expert opinion and education

102 News

Industry news

Ross Board reports on what's new in modo 601, and Michele Bousquet discusses changing pipelines

105 Project focus

Derrick the Deathfin

Ten24 explains how it landed a brief to design and create cardboard-style 3D assets for a new PlayStation Network game

106 Studio access

PS Vita AR

Mi sets the mood for Sony's PS Vita augmented reality launch games with several short introduction animations

108 Industry insider

Jack du Rose

How one man changed his life in a bookshop, vowing to become a jewellery designer to rival even the masters

110 Course focus

The 6-month Online VFX Creature School

Catch up with animationAteam.com to discover how more artists are creating believable animals on screen

> "Rapid prototypes are… prepared, smoothed, polished and freed of imperfections before being cast into precious metal"

Jack du Rose explains how his jewellery masterpieces make their way from ZBrush to gold. Page 108

Jack du Rose
Pride – yellow gold; champagne and white diamond; caramel sapphire. This jewelled cuff is just one in a collection of eight ornate designs
www.durosefinejewellery.com
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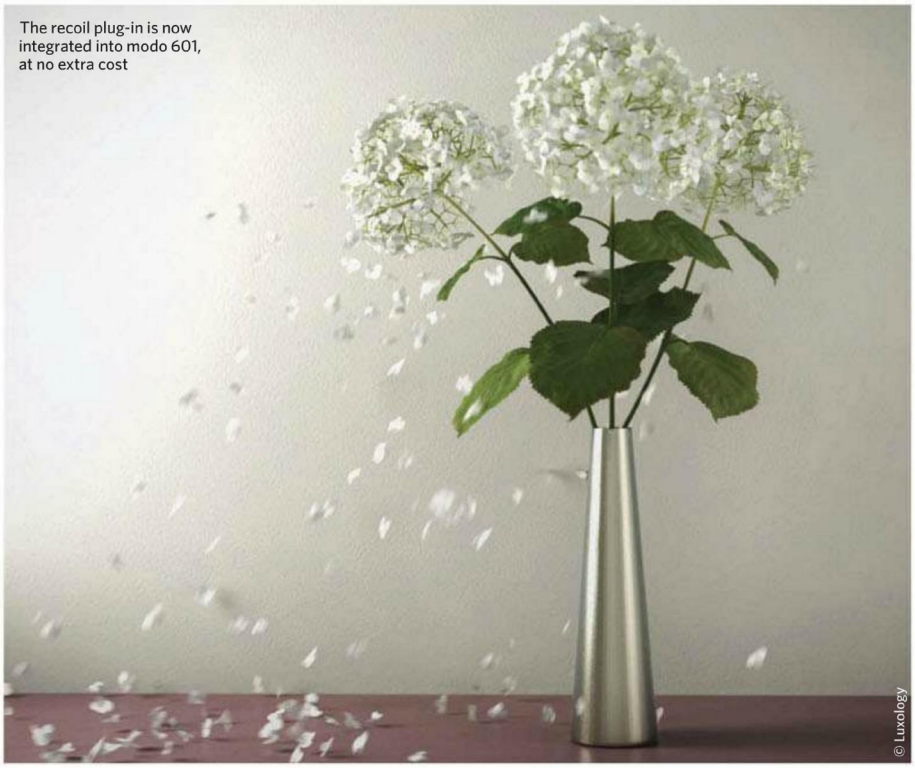

The recoil plug-in is now integrated into modo 601, at no extra cost

© Luxology

Bullet Physics included, as standard

modo's Bullet Physics library engine, previously sold at a $200 US premium, is now included in modo 601, enabling users to create realistic simulations of mechanical and organic motion, supporting both soft and rigid body dynamics. This, when combined with the new character animation tools, could lead to some highly innovative results!

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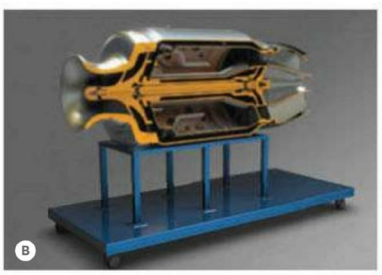

© Luxology/Yazan Malkosh

modo 601 arrives in style

Long-awaited character animation tools accompany a mass of new features in modo 601

modo 601

A modo 601 now features character animation tools

B Effects such as boolean operations can be applied at render time

modo 601 is Luxology's most substantial upgrade to date, cramming literally hundreds of new features and improvements into what was already a hugely flexible title, refining everything from cross-compatibility – particularly RenderMan – to the user experience as a whole.

Having greatly advanced in recent years, modo 601 seems to be gaining a strong hold in the market, with the software frequently found to be in use within the fields of product design, animation, advertising and architectural visualisation. To the company's credit, Luxology has always had a proactive role in developing innovative solutions based on user requirements, responding swiftly with incremental updates to satisfy demand, which would go some way to explaining its great success.

The new features list could happily fill the pages of an entire book, with notable additions including a long-awaited character animation toolset, integration of the previously chargeable recoil physics engine, refined retopology tools, volumetric rendering capabilities, new shaders/presets, 'Slip UVs', stereographic rendering window display, and render-time boolean/bevelling operations.

The new character animation capabilities make up the majority of the market buzz around modo 601 – and rightly so – with the new tools being touted as offering a natural experience for new animators, as well as the depth that seasoned professionals require. The innovative new Slip UV system also lends itself particularly well to 601, allowing textures to move independently of their mapped locations and therefore preventing unsightly texture stretching on animated models. Performance has generally increased too, with Luxology noting that users have experienced up to a tenfold speed increase when opening complex files.

modo 601 is available now for $1,195 US (approximately £753) from www.luxology.com.

CAD Loaders for modo 601

Alongside the release of modo 601, Luxology has launched the CAD Loaders plug-in, designed to allow users to easily import and manipulate Parasolid-based models within modo. This plug-in supports industry-standard XT, IGES and STEP file formats, and is available at an additional cost of $495/$695 US (approximately £312/£438). Visit: www.luxology.com/store/CAD_Loaders_for_modo.

> "Luxology has always had a proactive role in developing innovative solutions"

Ross Board is a 3D specialist based in London

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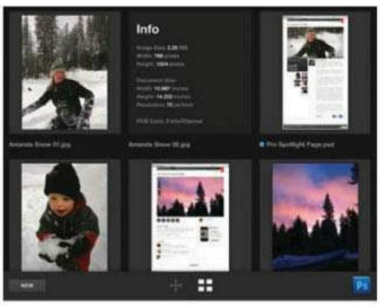
Photoshop for the iPad

Adobe's Photoshop Touch offers image-editing capabilities for artists on the move

Familiar Photoshop tools are ported to Photoshop Touch, albeit with a refined, multi-touch interface to suit the iPad



Photoshop Touch brings a handy image navigation toolset into the mix, for sorting and viewing files

Adobe's unveiling of Photoshop Touch has brought digital artists a feature-rich mobile image-editing program for the iPad 2 and the new iPad (the iPad 1 is not officially supported).

Photoshop Touch doesn't mimic its industry-leading sibling, though; instead, Adobe has opted to adapt some of the core features for use on a mobile platform – such as Quick Mask tools, Curves correction, Filters, Layers and blending modes. There is also a built-in image browsing and selection toolset for helpful organisation.

The app is a handy tool for artists that allows for the quick and easy manipulation of images – although users should be mindful of the 1,600 x 1,600 pixel limit on files, making editing photos and renders at full resolution somewhat beyond the scope of the iPad for the time being.

The Photoshop Touch app is available in the iTunes Store, priced at $9.99 US (approximately £6.29).

Meet the Wacom Intuos5

Wacom debuts its next-generation Intuos5 professional tablet range

Always keen to innovate, Wacom has recently released its revised Intuos5 tablet range, boasting complete touch and gesture sensitivity.

The Intuos5 range now inherits the complete touch sensitivity that was once only present in the lower-end Bamboo range, allowing users to completely eliminate the mouse, should they desire, and focus entirely on productivity.

While billed as a touch-sensitive computer interface, Wacom has been keen to maintain that the traditional pen input should remain the heart and soul of the experience, featuring the usual 2,048 levels of pressure sensitivity and 60-degree tilt tolerance.

The range is available in small, medium and large models, priced at £199.99/£329.99/£429.99. A pen-only version (minus touch sensitivity) is also available for £269.99.

Completely touch sensitive, the new Intuos5 range opens up many doors for creativity

Software shorts

Bringing you the lowdown on product updates and launches

KeyShot 3.1

KeyShot 3.1 is now available with various upgrades, including support for metallic paint, material templates, real-time HDR editing, improved texture mapping, 3Dconnexion certification, network rendering capability, animation interactions and a Maya importer. It's available now for $995 US (approximately £628).

V-Ray for Softimage

The long anticipated V-Ray for Softimage has now landed in commercial form, offering all of the highly favoured features of V-Ray alongside Softimage-specific additions, such as support for ICE, animated parameters and weight maps. One step closer to bringing about a universal VFX rendering pipeline, V-Ray for Softimage is priced at $1,265 US (approximately £798) per licence.

NOX renderer

Produced by Evermotion, the NOX renderer is a free, unbiased (physically accurate) rendering engine, and is now well into its open beta-testing phase. It can be used freely, even for commercial purposes, and is well worth trying out, producing pleasing results with relative ease. Find out more at www.evermotion.org/nox.

Insightful snippets

The Royal Institute of British Architects (RIBA) announces new scholarships

© RIBA

RIBA has announced four new scholarship awards for those looking to complete their Part 2 architectural qualification. Amid warnings that students of architecture require wider industry support, the RIBA will offer four students an extra £2,500 to support their studies.

RIBA president Angela Brady has said: "I'm delighted that the RIBA has been able to launch the 2012 Part 2 Scholarship in these tough and austere times... [Despite] raising much needed funds through the President's Fundraising dinner, and offering other high-profile and popular Scholarships with Aedas and Foster + Partners, the RIBA Education Fund is still not raising enough to meet the needs from the increasing number of Architecture students in financial hardship."

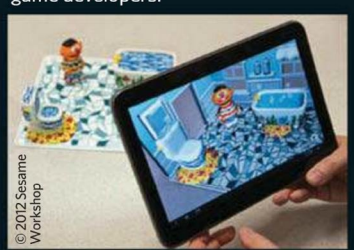
Copyright © 2012 Adobe Systems Incorporated

A look to the future

Vuforia, Qualcomm's cross-platform augmented reality solution, hits the market

Mobile technology company Qualcomm has developed a mobile augmented reality platform for developers. Named Vuforia, it enables users on iOS, Android and over 400 other mobile platforms to experience high-quality device-integrated AR.

The SDK is available freely on the market now from QDevNet and supports Windows, Mac, Linux and Unity. It ships with various free sample apps demonstrating potential uses and product highlights – an absolute dream for brand interaction designers and game developers!



Vuforia by Qualcomm is designed to demonstrate cross-platform AR innovation

New tools

Lucid Virtu, the long-awaited graphics card virtualisation solution, arrives at last

Lucid Virtu Graphics

Lucid Virtu represents the latest in graphics card virtualisation capability, enabling users to share GPU-intensive tasks such as gaming across discrete and integrated graphics hardware. While highly anticipated for a long time, it has been refined to the extent of completion, creating a manufacturer-agnostic virtual GPU computing environment that is able to drastically increase frame rates across the board. Support extends to that of high-end anti-aliasing and DX11, while still maintaining the needs of casual gamers. It is chipset specific, however, particularly targeting Sandy Bridge systems for the moment. Find out more at **www.lucidlogix.com**.

Lucid Virtu enables users to leverage power from both discreet and integrated graphics sources

"Opinion"

Models, they are a-changin'

Complex, demanding production pipelines mean rethinking the way we model

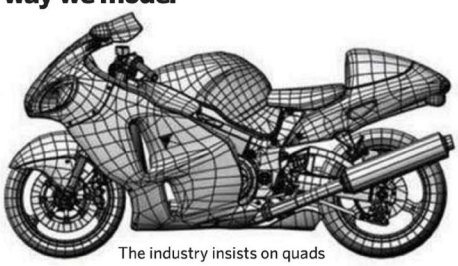
Award-winning animator and vice president of marketing at TurboSquid, Michele Bousquet, discusses top models

Michele Bousquet www.turbosquid.com/checkmate

Ah, the good old days, when a 3D model was good as long as it rendered decently. But these days, good also means the model plays nice with a variety of pipelines. At a studio, a model can pass through several software packages before it reaches its final destination of film, video, web or gameplay. A good model is easy to re-texture and rig; it imports or exports cleanly without suffering damage to faces, vertices or UVs.

If you use the mainstream tools included with your software package, you'll always be making good models, right? Wrong. Boolean and shape extrusion tools make funky topology that other software loves to hate. Even primitives are guilty of producing ngons (polygons with 5-plus sides), which programs like Mudbox and Silo can't reliably import.

> "CheckMate is changing the way we work. It's always best if the model is made right the first time"
>
> **Shane Davis,** senior artist/animator at IBM



The industry insists on quads

Production artists' concerns about topology and texturing led the TurboSquid marketplace to form the CheckMate 3D modelling standard. According to TurboSquid's research, the only type of topology that works in 99% of pipelines consists of quads (four-sided polygons) with clean edge flow and maybe a few tris (three-sided polygons). The CheckMate standard also includes common-sense rules like No Isolated Vertices and Normals Correctly Flipped.

The standard is publicly available in TurboSquid's Knowledge Base, along with free downloadable model-checking tools for 3ds Max, Maya and CINEMA 4D. TurboSquid has also implemented an in-house CheckMate certification programme for its own sellers.

Congratulations to...

Nexus and director Johnny Kelly are the unexpected stars of the Grammys

London-based animation studio Nexus, alongside Royal College of Art graduate Johnny Kelly, were the recipients of a surprisingly good reception at the US Grammy awards for their stop-motion advert for US food chain, Chipotle. Set to an acoustic cover of Coldplay's 'The Scientist' by country legend Willy Nelson, the animation charts the journey of animal farming practices and highlights Chipotle's belief in animal welfare and fair farming.

The stop-motion story of a farmer's animal welfare discoveries has won the hearts of many across the world

GDC 2012

This year's Games Development Conference in San Francisco gets record attendance

The world-renowned Games Developer Conference (GDC) 2012 saw a record attendance, with over 22,500 visitors flocking to San Francisco to check out the latest in videogames technology – a dramatic 17 per cent increase on last year's attendance. 2013 dates have also been confirmed, with the event to take place between 25 and 29 March at the Moscone Convention Center, San Francisco. Tickets are available now, with prices starting at $195 US (approximately £123). Visit www.gdconf.com.

Project Focus

Derrick the Deathfin

Ten24 explains how an underwater papercraft world was created in 3D for Different Tuna

Project Derrick the Deathfin
Description Ten24 was briefed with the task of designing and creating 3D assets for this PlayStation Network game
Client Different Tuna
Country UK
Software LightWave, Maya, Silo, Photoshop
Company Ten24 was started in 2008 by 3D artist James Busby, with the aim of providing high-quality assets for the game, TV and film industries. Building an exceptional team of freelance artists, the company has landed several high-profile projects including the full-motion video (FMV) character work for *Dead Island*, *Disney's Pirates of the Caribbean* and *Risen 2*. Andy Turner, Tim Brown and Chris Rawlinson joined the roster in 2010 to form a collective under the banner of Ten24
Website www.ten24.info

Watch!
Check out the teaser trailer on Vimeo at **http://vimeo.com/37102599**

Derrick is a cardboard shark that's forced to eat and destroy everything in his underwater path in an effort to stay alive.

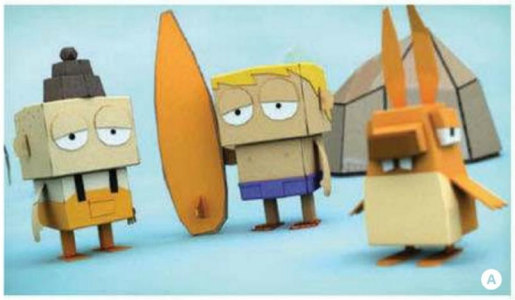
"Imagine a psychopathic Ecco the Dolphin on a killing spree and you're halfway there!" Ten24's founder James Busby enthuses.

The project kicked off when Ten24 collaborator Andy Turner was approached by games production company Different Tuna while looking for someone to produce the assets and animation for *Derrick the Deathfin*. "Originally the idea was to actually build real paper models of everything, but that idea was never considered viable – mainly due to cost and difficulties with animation," James explains. Ten24 was soon drafted with the brief to tackle the in-game 3D assets and animations that would go on to sell the concept of Derrick's paper-crafted world, and so began a five-month stint of modelling and animating at the home of the talented collective.

Ten24's Andy Turner and Tim Brown found LightWave's modelling tools a perfect fit for the tasks at hand, while Chris Rawlinson used Silo for much the same reasons. The finished models were then taken over into Maya for rigging and animation work. "The modelling was never going to be technically difficult – after all, we're talking about very polygonal looking designs," James says. "The key was to make sure the UV-ing and texturing emphasised the folds and textures you get when you make something from paper."

Derrick the Deathfin is due for release in the summer of 2012. "Ten24 already has a reputation for producing high-end photorealistic assets for TV and games trailers," James adds. "We hope the Derrick production will help show that we can produce more of this varied and fun game asset work in the future!"

> "The key was to make sure the UV-ing and texturing emphasised the folds and textures you get when you make something from paper"
> **James Busby,** Ten24 founder



Contributors

James Busby Founder
Andy Turner 3D artist
Tim Brown 3D artist
Chris Rawlinson 3D artist

A Different Tuna's Gordon Midwood had worked with street artist and art director Ronzo before and decided to collaborate on a look that would incorporate Ronzo's graphic style

B Concepts for characters in Derrick the Deathfin's world were provided by art director Ronzo, who initially modelled real cardboard versions of a couple of the characters from the game

C Derrick's world is colourful, vibrant and friendly. Everything was modelled and rendered in LightWave, the modelling done with a combination of Maya, LightWave and Silo

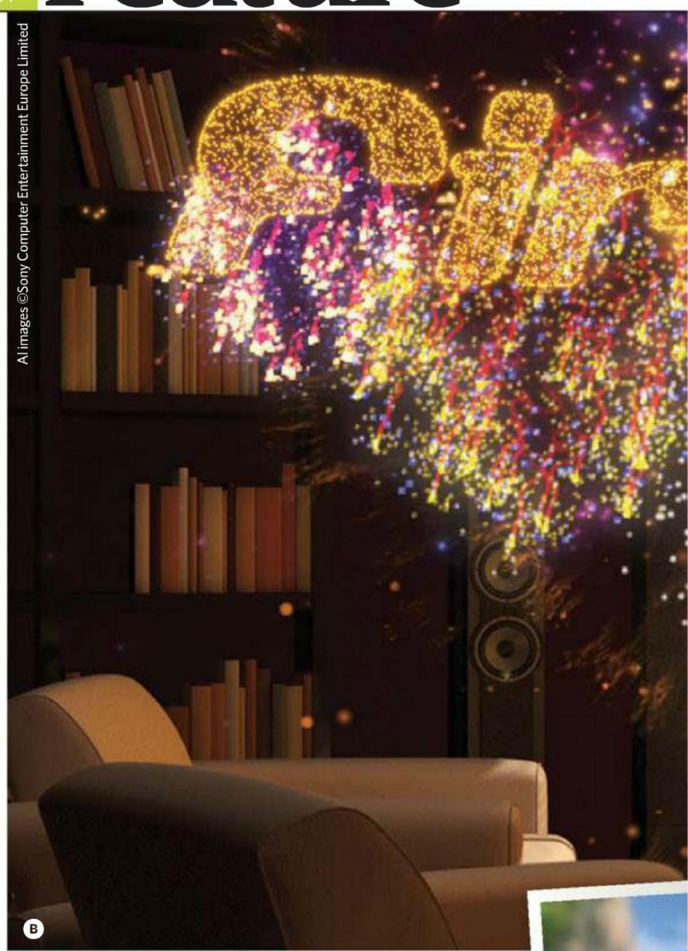
D The Ten24 modellers worked with Ronzo and his sketches of the cast of characters, to help turn them into believable CGI papercraft assets to sell the concept of Derrick

E Ten24 used the cardboard models created by Ronzo and replicated them in CGI as a proof of concept, and to show that the team could maintain a papercraft look in CGI

Studio Access

Sony PS Vita AR game intros

Mi talks about several animations created for Sony's PS Vita augmented reality launch games



All images ©Sony Computer Entertainment Europe Limited

Studio Mi
Description Mi is a creative production studio based in Manchester and London, specialising in games, architecture, brands and broadcast. This year Mi has been involved in the first full-page ad takeover of the MTV homepage for Vimto, produced intro films for many of the AR games released on the Sony PS Vita, created a cinematic for the global launch of *NASCAR The Game*, and loads more

www.wearemi.com

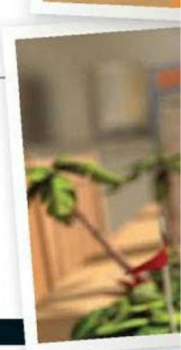
Project title Sony PS Vita AR game intros
Description The brief was to create five animations to introduce and set the scene for the Sony Vita AR release titles
Country UK
Client Sony
Software used Maya, 3ds Max, V-Ray

Like many young studios, Mi was born out of changes in the digital landscape. With an extensive technical and creative background, the team laid down a concrete plan, took a strong strategy and has been developing from strength to strength since, answering briefs from all kinds of clients along the way.

A brief from Sony to create the exposition pieces to set the mood, tone, look and feel of the PS Vita AR launch games was an exciting proposition for Mi. The concept was to capture the essence of the games and limber up players through humorous short intro animations (check them out at **http://wearemi.com**). "Mi had done quite a bit in the field of AR for various clients; we knew how it worked and how it can be wasted," Mi says. "These games, however, have a great take on how to impart an often-wasted technology into really sweet little games."

The first step was to identify each game's unique selling point. "With [Cliff] Diving it was Dan's character; Fireworks was the interplay of the houses; [Table] Football was the fact that it invoked nostalgia of our youth," Mi offers. "We wanted you to feel like you were building up to a *FIFA*-type game but then it jumps into a much cooler retro vibe which would strike a chord with the *Sensible Soccer* crowd." The problem was getting past the initial problem of communicating a concept without looking through the console. "We got around this by either creating cool reveals of the game world actually being on a real tabletop, or making it seem that in the character's head they live in the real world," Mi continues. "With a free hand we moved through the gears from coming up with creative to storyboard, animatic, early renders and then iteration. I think we just got what they wanted very early on, bought into the ideas of the games, and then provided [Sony] with creative [input] to complement [them]." It wasn't just about coming up with creative ideas: the developers also had to crunch them into a real-time render engine. "Knowing what it's like from the development side, you have got to be careful not to try and cheese these guys off!" Mi says. "Sometimes they are very late in the development cycle."

Due to tight deadlines, most artists were working on all five animations simultaneously. Cliff Diving was mostly tackled in Maya, with 3ds Max used for some of the modelling. "As a lot of our modellers use 3ds Max it makes sense to do it this way rather than



Technical challenges

Mi talks about the main hurdles the team faced with these projects

"The biggest technical challenge we faced was having to create the Fireworks house animations without any houses. We weren't going to be receiving the models until a later date and we really needed to push ahead with the animation due to the already tight deadline. We came up with a rig solution, [driving] a series of controls, which would in turn deform any geometry within them. When we received the final house models we replaced the proxy geometry, tweaked the animation and still had time to spare!"

Key people

Gareth Thatcher
Technical director

Adam Dickinson
Production director

Ian Hogg
Creative director

Anthony Campbell
Technical artist

Max Wood
Junior artist

Portfolio highlights

Here are some of the big projects Mi has worked on:

2012 *Sony, Table Football intro*
2012 *Sony, Cliff Diving intro*
2012 *Sony, Fireworks intro*
2012 *BBC, Alesha's Street Dance Superstars*
2011 *Vimto, Bounce 'n' Boom TV advert outtakes*
2011 *Activision, NASCAR The Game cinematic*
2011 *MTV, Vimto homepage takeover*
2010 *CBeebies, Get Set Go intro*

A Particle Flow helped create the rocket trails and explosions. "We set up a simple fireworks template, which we could then branch off into new flows to create a huge variety of fireworks and colours"

workspace
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George Lucas on 01202 586421 or
george.lucas@imagine-publishing.co.uk

Healthy competition

Mi explains how it's good to keep an eye on what others are doing

"It's a great time to be involved with creativity and technology – there are so many studios pushing things. Of course, we're bound to say that there is no one exactly like us, but we keep a watch on all sorts of people: Studio AKA, Studio Output, MIR, AXIS, but also Naughty Dog for their lean management structure and creative excellence."

> "Audience expectations of a new Sony console are always sky high"

learn a new software package," Mi further explains. "The Diver Dan character was modelled by Spiral House in Liverpool; we then rigged and upped the resolution... We did a quick previs for camera and layout sign-off, then got down to animating Dan and texturing his environment. We rendered everything in-camera using V-Ray."

The results are impressive, and Mi is happy about what has been achieved. "I think we have managed to capture what the concept is all about for AR," Mi concludes. "It's play-world mixed with the real world to enhance each other. We're confident we pulled it off, even though audience expectations of a new Sony console are always sky high."

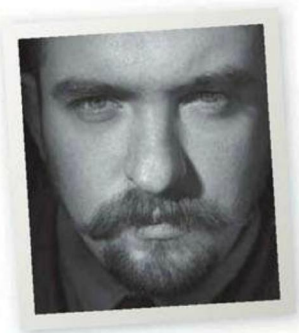
B FumeFX was used to create the main rocket trail, which gave the volumetric look to the smoke. If you look closely it blows some of the garden furniture off the table. Mi is considering switching to PhoenixFD

C Sony had almost daily feedback and comment. Mi used Basecamp project management software to converse and log everything – without this and great client feedback, the short timescale would have made it impossible!

D "We have artists who work in 3ds Max and Maya, so the jobs were divided accordingly," Mi says. Fireworks was all done in 3ds Max, while the Cliff Diving and the Table Football sequences were mostly handled in Maya

E Mi was honoured to be part of the launch titles for the Sony PS Vita handheld console. As the games are available free for download, the studio believes that the chances are that most owners will try the games

F The pieces Mi created were varied. Mi says: "We basically thought on a simplistic level that if the Vita hits anywhere near the PSP numbers, we're talking around 70 million people could potentially see Mi's work"



Industry insider

Jack du Rose

Designer

An inspiring chat with a self-made jewellery designer using ZBrush to create beautifully ornate designs from every angle

About the insider

Job Designer
Location London, UK
Education BA hons English Literature
Company website www.durosefinejewellery.com

Biography For this self-taught jewellery designer, sculptor and artist, it all started in an antique bookshop, where a volume of jewellery illustrations would change the course of his career forever. Learning and honing the skills of designing, sculpting and creating beautiful jewelled art, Jack soon set his sights on Stephen Webster's design studio in London, where he later worked with some of London's great jewellery designers. When timings were right, armed with invaluable experiences aplenty, Jack decided it was time to embark on his own projects, and so founded the Du Rose studio

When Jack du Rose stumbled across the vintage illustrations of works by jewellers René Lalique, Paulding Farnham and Fabergé, he vowed from that moment he would learn to make his own pieces to rival these masters.

Jumping into 3D software to make his own silver designs, Jack started off using JewelCAD, Rhinoceros 3D and SolidWorks, but soon found the frustrations of CAD design's rigid disciplines pushed him towards poly modelling, where a host of new possibilities arose. Now handling about 90 per cent of his design work in ZBrush, and using modo and Rhino as necessary, Jack talks to 3D Artist about his incredible new jewellery collection, 'Danger', eight unique pieces inspired by the world's dangerous yet beautiful creatures.

3D Artist: *Tell us about the 'Danger' collection?*
Jack du Rose: [It's] something I have been plotting for five or six years, and which I've been working on more or less full time for about two years before launching the collection... I was really inspired by some of the master jewellers from days gone by and I feel that a lot of that artistry is no longer apparent in modern jewellery, which has tended towards a greater focus on commerciality. I feel that, with many jewellers, even in their top-end designs, the main focus is on what other people can see. For me, if an object is precious, it should be precious from every angle, with equal care and attention, both inside and out.

3DA: *Can you walk us through your workflow?*
JdR: I typically sculpt the model in ZBrush and produce several rapid prototypes for design verification, making everything from minor tweaks to wholesale redesigns based on the resin rapid prototype. The difference between what you see on the screen and how it looks and feels in reality can be dramatic, especially as in ZBrush there is no way to ensure accuracy in dimensions, so everything has to be done by eye.

Once we are happy with a sculpt aesthetically, we start moving the piece over the various technical hurdles to getting the model production-ready. [These include] splitting the design into many pieces to ensure it is possible for it to be perfectly polished and finished, hollowing, weight reduction, laying out gem stones, back holing and various other stages. Once we are satisfied we have a technically accurate, aesthetically pleasing model, we proceed to rapid prototyping for production. The rapid prototypes are then prepared, smoothed, polished and freed of imperfections before being cast into precious metal. The castings are then filed and polished and made ready for pre-assembly to ensure that after it has been set, all the pieces will slot together like very expensive LEGO!

The evolution of 3D printing

Jack explains how rapid prototyping has improved in jewellery making

"[CAD] and rapid prototyping was a relatively recent development and rarely used when I started nine years ago. Now it is far more mature and more or less de rigueur. We do two phases of rapid prototyping: the first set of prototypes is produced using the Objet Eden for design verification and to inform subsequent design and modelling; the production rapid prototypes [are] produced using a number of different machines including the Envisiontec and CNC milling."

> If an object is precious, it should be precious from every angle, with equal care and attention... inside and out

'Hubris' – white gold; pink tourmaline; black, white and pink diamond. Inspiration often comes from considering a theme and thoroughly researching it

Portfolio highlights

Jack has worked with some of London's top artists, including:

2009
'White Light'
by Shaun Leane

2006-2007
'For the Love of God'
by Damien Hirst

'Indulgence' – white gold; lagoon tourmaline; mandarin garnet; emerald; black and white diamond. Jack's art is as intricate and impressive on the interior as it is on the outside

workspace3D
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George Lucas on 01202 586421 or
george.lucas@imagine-publishing.co.uk

Jack astounded the ZBrush Central community with his designs. His next collection is going to "really push me to my absolute limits, but that's what it's all about"

'Balance' – white gold; ruby; diamond. Jack possesses an innate desire to create beautiful collectables that the owner can appreciate from any angle

© Danger by Du Rose. Prices upon application. To book an appointment call 020 7845 7800

3DA: *What considerations do you need to keep in mind when sculpting your jewellery designs in ZBrush?*
JdR: Many different considerations must be taken, most of which unfortunately come down to eye and experience. Ultimately, however, you have to be extremely careful and sensitive to fine details, thicknesses and curves, which you might not otherwise have to be in purely digital sculpting.

3DA: *You worked on the Damien Hirst skull – at what point in your career was this, and what did that opportunity do for your career?*
JdR: I worked on the skull in 2006, about three years into my career. I had absolutely no idea how to do it, I didn't know about ZBrush at the time, but as with everything else I just worked it out. In the end I did the whole thing using CAD, which was extremely arduous!

A 'Lust' – white gold; black, white and grey diamonds; tanzanite; enamel. Without modern design and manufacturing tech, some of the pieces in Danger would be impossible to make

B 'Temptation' – yellow gold; yellow, orange and blue sapphire; cognac, champagne and white diamond; black opal. It's an involved process with craftsmen the world over contributing

C 'Deceit' – white gold; blue sapphire; tsavorite; white diamond; enamel. Jack's meticulous attention to detail in the 3D of his creations sets him apart from his contemporaries

D 'Mortality' – white gold; rose gold; palladium; black, white and pink diamonds; enamel. The design process typically takes between one and three months, depending on complexity

E Each piece comes with a deadly Scorpion key – a functional jewel that safeguards the jewellery and unlocks/locks the cabinet, identifying the bearer as the owner of an element of Danger

The best courses and freshest talent from around the globe...

The 6-month Online VFX Creature School

animationAteam.com offers a course with rare insight into creating realistic on-screen animals

What's easier to animate: a singing, laughing, tap-dancing penguin, or a true-to-life puppy toying with a ball? You might assume the former is the more demanding task, but in actuality it's the puppy that's likely to present the most challenges.

Fantasy creatures are limited only by the animator's imagination. They are conjured up in the mind's eye, the audience taken along for the ride. With a real animal the animator doesn't have the safety net of invention; the audience has a benchmark by which to judge the work. They won't know what a dancing penguin looks like until you show them, but they certainly know how a playful puppy moves.

True-to-life animal animation is tough, which is why Rob Hemmings started The 6-month Online VFX Creature School. This specialist course focuses on the finer details of creating convincing key-frame motion in creatures (including humans) and animals, from careful observation though to accurate timing and fluidity in movement.

The six-month program has been designed around the same process that takes place when working on a project in a film studio. Students choose a rig from a variety of animals, storyboard their sequence, and then study online movies to observe the behaviour and personality of their chosen creature.

Students will then hone the process behind the creation of walk/trot/run cycles, learn path animation techniques, use stepped keys to create important poses, and polish the animation, adding weight and believability to the motions.

Throughout the course students submit work in process videos to their tutor, who will email back criticisms, notes, images and movies relating to the improvement of the shot.

What students will come away with from the course is an ability to animate creatures quickly and convincingly with a sharp eye for detail, and be equipped to competently tackle any type of creature animation project to the highest level. In an industry that has recently demanded anything from digital equines in *War Horse* to hyper-intelligent primates in *Rise of the Planet of the Apes*, it's a skill any budding animator would wisely want to have under their belt.

> "Studios, particularly in the film industry, are always keen to see this kind of work on a candidate's reel"
> **Rob Hemmings,** founder and tutor, animationAteam.com

A Although this course focuses on realistic animal movement, the skills learned can also be applied to creating improved fantasy creature performances

B Course tutor Rob Hemmings is also an animation recruiter, and has a sharp eye when it comes to finding suitable job opportunities for his students

Course details

Name The 6-month Online VFX Creature School
Length Six months
Website www.animationateam.com
Fees £3,475 (if paid by a plan of six instalments of £579/month)
£2,995 (if full amount paid prior to taking the course)
A deposit of £200 will be required to confirm your booking. This will be deducted from the overall fee

Entry requirements Applicants for the six-month course must have previous experience with Maya. If the applicant does not have this experience, they will be required to undertake an introductory two-month course before beginning the creature school, which is priced at £4,495 for the full eight months

Tailored to fit

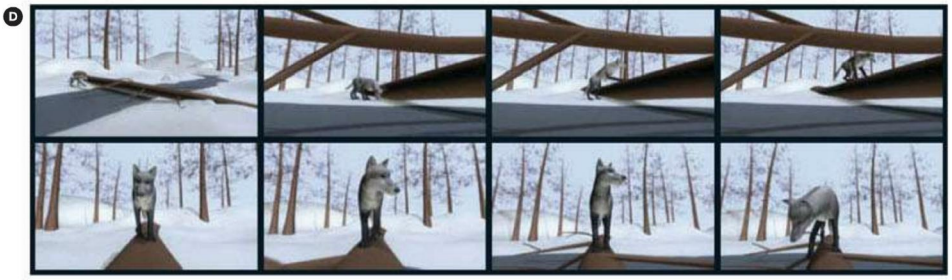
Although the six-month course is aimed predominantly at those who wish to hone and develop existing skills, it can also be taught to anyone who wants to start from scratch with an introductory two-month beginner course.

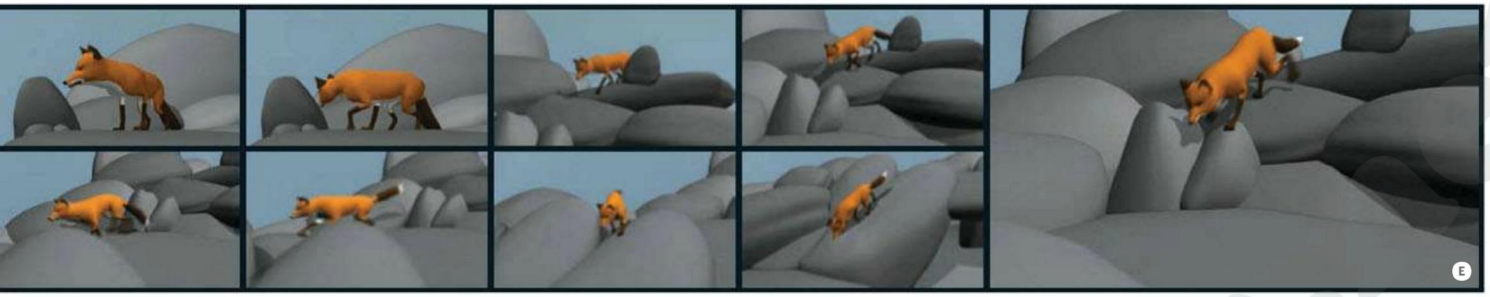
animationAteam.com also runs a 5-day Short Course, which teaches all the important techniques learned on the online course, but in a much quicker and intense way, with smaller classes so that the student can receive individual attention from the tutor. Find out more at http://animationateam.com/5-day-short-course.

focus

STUDENT GALLERY

Founder and tutor Rob Hemmings talks us through some of the impressive animal animations created by students who have already completed the six-month course





C Deepak Venkatraman
Title: Baboon Jump
"This animation contains some well-observed key poses, and some incredible fluidity to the movement. The blocking had to be well organised"

D Roberto Pita
Title: Wolf Crossing
"Very realistic fluid movement captured here by Roberto. A combination of path and block animation that is seamlessly blended together"

E David Beer
Title: Fox on Rox
"David has captured the light movements of the fox in this animation very well. There is some nice variety in the trotting gaits as the fox clambers down the rocks"

F Harinarayan Rajeev
Title: Puppy and Ball
"There's some great use of the QPAS animation system that was created here at animationAteam.com, which is blended into some nicely observed key poses"

G Kahye Hwang
Title: Cat Chasing Fly
"Well observed poses, and great movement captured in the pelvis as the cat winds itself up, ready to pounce. These details were added after the splining of the block"

H Tom Mortimer
Title: Dog Jumps into Lake
"Tom took on quite a task here; the sequence includes a range of gaits and motion, including a run, walk, trot, jump, swim and shake"

On the Disc

Three rendering software trials
Demos for you to test

Models worth $100
High-quality assets from 3DOcean

Free HDRi maps
Two high-resolution files, worth £13

Video training course
1.5 hours of training from Digital-Tutors

On the free disc

This issue's disc includes over 1.5 hours of video training from Digital-Tutors, models worth $100 from 3DOcean, a trio of software trials, two free HDRi maps plus more

All you need to follow this issue's workshops

Tutorial files

This issue Yasin Hasanian has provided two strawberry seed brushes to accompany the ZBrush part of his food-focused tutorial on page 56. Lech Sokolowski has also provided numerous resources to help you with his arch-vis project. Files include the 3D scene with basic environment setup and shaders, image files, plus sample shaders for your free use.

1.5 hours of video training

Learn how to utilise render elements in V-Ray for Maya, courtesy of Digital-Tutors

Digital-Tutors is a learning resource site boasting the largest library of CG training, with over 17,000 video-based lessons. This month we've got a full 1.5-hour course on utilising render elements in V-Ray for Maya.

This set of 13 videos covers everything from compositing V-Ray render elements and rendering a material ID pass, through to compositing raw render elements from V-Ray. The project files are also included in the bundle.

For more online training on a range of software and subjects, head on over to Digital-Tutors' website: www.digitaltutors.com.

Rendering software trials

A trio of demo versions to take for a spin

To coincide with this issue's feature on standalone rendering solutions, we've prepared a selection of demos to test out.

First up is the Maxwell Render demo from Next Limit, which comes with an additional 20 textures and five plug-ins. The Maxwell Render Suite software package provides a complete solution for those who want maximum image quality and full control of the Maxwell Render technology. Next we have a 30-day trial of the Bunkspeed PRO Suite. This software enables its users to streamline their workflow and accurately simulate real-world lighting and materials. Last, but by no means least, we have KeyShot – a powerful rendering and animation software from Luxion. This trial version gives you access to the full licence with animation for two weeks.

Unfortunately, due to disc-space limitations, the Maxwell Render and KeyShot trial versions are hosted on our website.

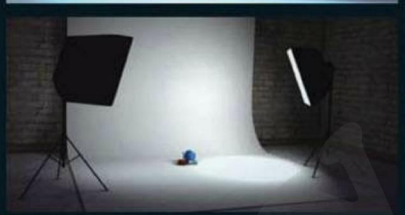
Unity 101

Roald Høyer-Hansen shares his workflow

Accompanying Roald's tutorial, that introduces artists to Unity, is a project file package. It comes with a complete visual record of his entire process in video format, totalling 36 minutes of helpful tuition.

While the videos aren't narrated by Roald, they do offer a fantastic insight into his workflow in Unity, helping you to fully understand this issue's Back to Basics tutorial. As a bonus, Roald has also supplied a video showing how to light a scene using a HDRi map.

Unfortunately, due to unavoidable disc-space limitations, the videos are hosted on our website.



Free HDRi maps

Two high-resolution files, worth £13

StudioHDRIMaps.com is a UK-based company specialising in building HDRi lighting environments for studio-based 3D renders. This issue, the company has very kindly supplied two of its commercial-grade HDRi maps to use in your personal projects.

The first is a Three Fill One Key HDRi map, worth £8, with a resolution of 3,000 x 1,500px. Supported applications include, but are not limited to: 3ds Max, Maya, CINEMA 4D, modo, KeyShot, Bunkspeed, Maxwell Render and V-Ray.

The next file is from Volume 1 of the Studio Coves HDRi mega pack. Studio HDRI Maps has supplied one commercial-grade studio HDRi map worth £5, for **3D Artist** readers to use in their projects.

In addition to the resources, Studio HDRI Maps is also offering readers an opportunity to purchase an exclusive light tent bundle of 20 maps for just £36 – 60% off the usual retail price of £119. The pack includes ten Studio Cove HDRis, ten Lightbox HDRis and five free backplates. Access the promo link on the disc interface to find out more.

Free 3D models

Quality assets worth $100, free from 3DOcean

3DOcean is an Envato marketplace, which enables its users to buy and sell royalty-free 3D models, textures, concepts, materials and shaders. All items are priced on the complexity, quality and use of the file.

This issue 3DOcean has kindly offered **3D Artist** readers a collection of rock instruments, which includes a bass guitar, electric guitar and an amplifier worth a combined $100.

Please note that 3DOcean has issued these resources on a regular licence. For full details of permitted usage, please refer to the licensing document packaged with the models on the disc.

Packed with 3D assets

Getting started with the CD

Put the disc in the drive to deliver a wealth of 3D goodies to your desktop

Simply insert the disc into the CD drive and the menu will start running. Click Accept on the terms and conditions to progress to the menu itself. You'll find 1.5 hours of video tuition on the disc, plus models worth over $100, software demos, tutorial files and more.

1.5 hours of video training

To link with the four-page Masterclass, Digital-Tutors has very kindly supplied a full, 1.5-hour video course to accompany the pages of the magazine. There are w3 videos in total, plus project files.

3DArtist CD
Free with issue forty-one
CONTENT WORTH $118
PROJECT FILES ALSO INCLUDED
Three rendering software trials
Demos and assets for Maxwell Render, KeyShot and Bunkspeed PRO
Models worth $100
A selection of high-quality musical instruments, courtesy of 3DOcean
5 hours of video training
Learn how to utilise render elements in V-Ray for Maya
Plus: Two HDRi maps, Unity workflow videos, inspirational gallery images and magazine tutorial files

Tutorial files

This issue's disc includes 36 minutes' worth of Unity videos from artist Roald Høyer-Hansen, some strawberry seed ZBrush brushes for Yasin Hasanian's food-focused tutorial, plus scene files, sample shaders and more from Lech Sokolowski.

High-quality resources

Freebies this issue include over 1.5 hours of video tuition, HDRi maps for use in your projects, musical models worth $100 from 3DOcean, plus more

On the Disc

Models worth $100

This issue 3DOcean has kindly offered **3D Artist** readers with a collection of rock equipment, including a bass guitar, electric guitar and an amplifier worth a combined $100.

3DArtistonline.com

The fun doesn't stop with the magazine! There's the website and gallery for uploading your images and commenting on those of other 3D artists, and there's the forum for all your 3D-related questions, comments, discussions and problems. If you have suggestions for the magazine or just want to comment on each issue, then head over there and say your piece. Remember to sign up and register, then click for the forum to remember you for the next visit and you can post away.

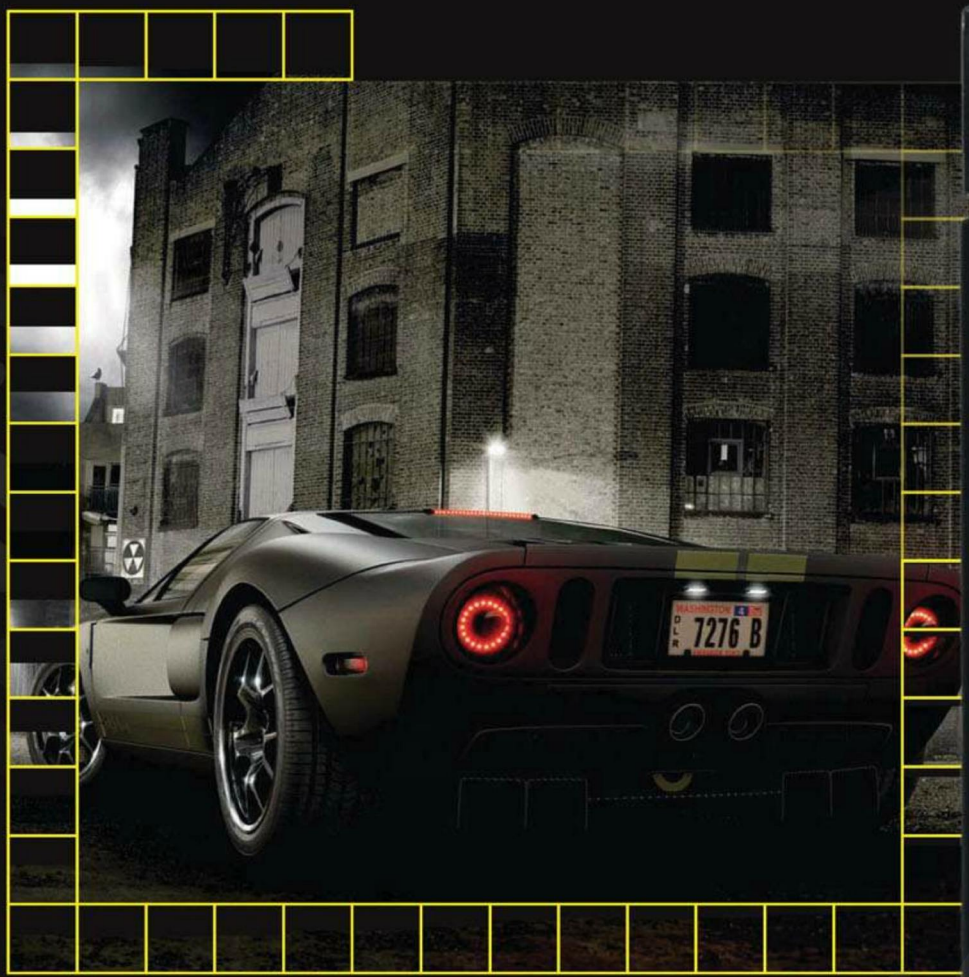
www.3dartistonline.com

Any disc problems

If the menu doesn't run or your disc is faulty then we will replace it free of charge. Just drop an email listing the problem to 3daxtrahelp@imagine-publishing.co.uk and it will be sorted out promptly. Please don't send mail about the disc to the editorial team, as that is the wrong department for dealing with your problem. If you are having problems getting the best out of individual programs or extras provided, then please contact the relevant software companies.

Issue 42 of **3DArtist** is on sale 23 May 2012

Ultimate Render Speed...



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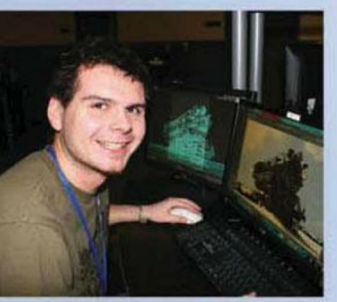
HOW MUCH DID YOU LEARN LAST WEEK?



DANIEL CHAVEZ

PRIOR TRAINING: *NONE*
TIME IN SCHOOL: 3 WEEKS
MODELING TIME: 1 WEEK

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